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Grazing Environmental Impact Statement

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From: State Director, Nevada

Subject: Nevada BLM Publications

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Schell Resource Area Proposed Domestic Livestock Grazing Management Program Draft Environmental Impact Statement

Schell Resource Area Grazing Draft Environmental Impact Statement Summary

/s/ Roger J. McCormack
Associate

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ENVIRONMENTAL IMPACT STATEMENT

PROPOSED DOMESTIC LIVESTOCK GRAZING MANAGEMENT PROGRAM

for the

SCHELL RESOURCE AREA

Nevada

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Prepared by

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ELY DISTRICT

State Director
Nevada State Office

The Bureau of Land Management proposes to implement a livestock grazing management program for the Schell Resource Area of the Ely District in east-central Nevada. This program proposes to allocate forage to livestock, wildlife and wild horses; establish sustained yield levels of forage utilization within three years based on a vegetation monitoring program; determine range management developments to improve forage and the management of the forage resource; outline a general implementation schedule; and list the standard procedures for operation with the major goal of solving 5 major resource problems. Four alternatives are considered along with the Proposed Action. They are: Resource Protection, Graze at Preference, No Livestock Grazing, and No Action. A discussion of the affected environment is briefly summarized and the environmental consequences occurring from the Proposed Action and each alternative are documented in the EIS.

For Further Information Write George Cropper, Acting District Manager
Star Route 5, Box 1, Ely, Nevada 89301
or call 702-289-4865

Date by which comments are due:

AUG 17 1982

SUMMARY

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

The Bureau of Land Management (BLM) proposes to implement a livestock grazing management program in the Schell Resource Area (RA) of the Ely District, Nevada. The Schell RA encompasses 4,240,000 ac of public land in east central Nevada (see Location Map). About 119,000 ac of private land are intermingled throughout the area. The Humboldt National Forest, Lehman Caves National Monument, and the Goshute Indian Reservation all have lands within, or adjacent to, the Schell RA, accounting for another 1,642,000 ac.

Analyzed in this environmental impact statement (EIS) are the Proposed Action and four alternatives: Resource Protection, Graze at Preference, No Livestock Grazing, and No Action. Chapter 1 discusses the alternatives, including the Proposed Action. Major differences between alternatives revolve around allocation of forage. Management Framework Plan Step 3 (MFP-3) decisions will be made in 1983 on the grazing management program to be implemented. The actual schedule of implementation will not be known until that time. Final decisions will be based on the area Manager's recommendations, this EIS, monitoring data, and inputs from Coordinated Resource Management and Planning (CRMP). The Proposed Action starts with present use (the 1977-1979 three year average) or 136,669 AUMs. Livestock and wild horse adjustments would be made in 3 years when monitoring data would be available to manage forage utilization at sustained yield levels. For analysis purposes in this and the other alternatives, reductions in livestock and wild horse use of 10 percent were assumed to be required in 35 allotments with a present utilization problem. In the short term, increases in use are allowed due to range management actions (seedings, water development, AMPs, grazing systems) that would potentially increase available forage (Summary Figure 1). By the end of the short term, livestock use would be about 138,006 AUMs, 101 percent of present use. Slight increases would occur in the long term due to additional management actions in that in the long term use would be about 104 percent of present.

The Resource Protection alternative would initially reduce present use by 22,156 AUMs (16 percent) which would be allocated to wildlife. Intensive range management actions would increase livestock and wild horse use slightly in the remainder of the short term, but would remain below present levels. In the long term, wild horse and livestock use is expected to increase from short term levels, but still not back to present use. Wildlife use would remain at short term levels.

The Graze at Preference alternative would initially license livestock use at active preference, a 92 percent increase over present use, and remove all wild horses. For analysis purposes, it has been assumed that this would cause severe overgrazing on most allotments, resulting in significant reductions in use within 3 years when monitoring data becomes available. Range management actions, primarily 3-5 years of total rest from livestock grazing, would be required to return most of the area to usable status. In the long term, livestock use would still be nearly 50 percent lower than present use on most allotments.

The No Grazing alternative analyzes the effects of complete removal of livestock grazing, which would provide additional forage for wildlife and wild horses.

The No Action alternative assumes livestock, wildlife, and wild horse use would remain the same as at present in the short and long terms.

The present condition of the affected resource area is discussed in Chapter 2. The environmental impacts of the alternatives, including the proposed action, are discussed in Chapter 3 and are summarized in Summary Table 1. This table outlines by discipline the significant adverse impacts (SAI) and significant beneficial impacts (SBI) of each alternative and provides a basis for public review and for making a choice among options.

During scoping for this EIS, and during the MFP conflict analysis, 5 major resource problems that are occurring in the Schell RA were noted. Objectives were devised to help solve the problems. The problems and objectives are:

1. Problem: Improper utilization of the vegetation resource occurring on portions of the Schell RA.
   Objective: Manage the vegetation resource and its uses to attain utilization rates not to exceed those recommended by the Nevada Rangeland Monitoring Task Force for sustained yield (45 percent for shrubs, 55 percent for grasses and forbs).

2. Problem: A decline in historic wildlife numbers and crucial habitat that is unprotected.
   Objective: Attain and maintain habitat for reasonable numbers of wildlife, reestablish bighorn, pronghorn antelope, and elk on historic ranges, and protect crucial wildlife habitat.

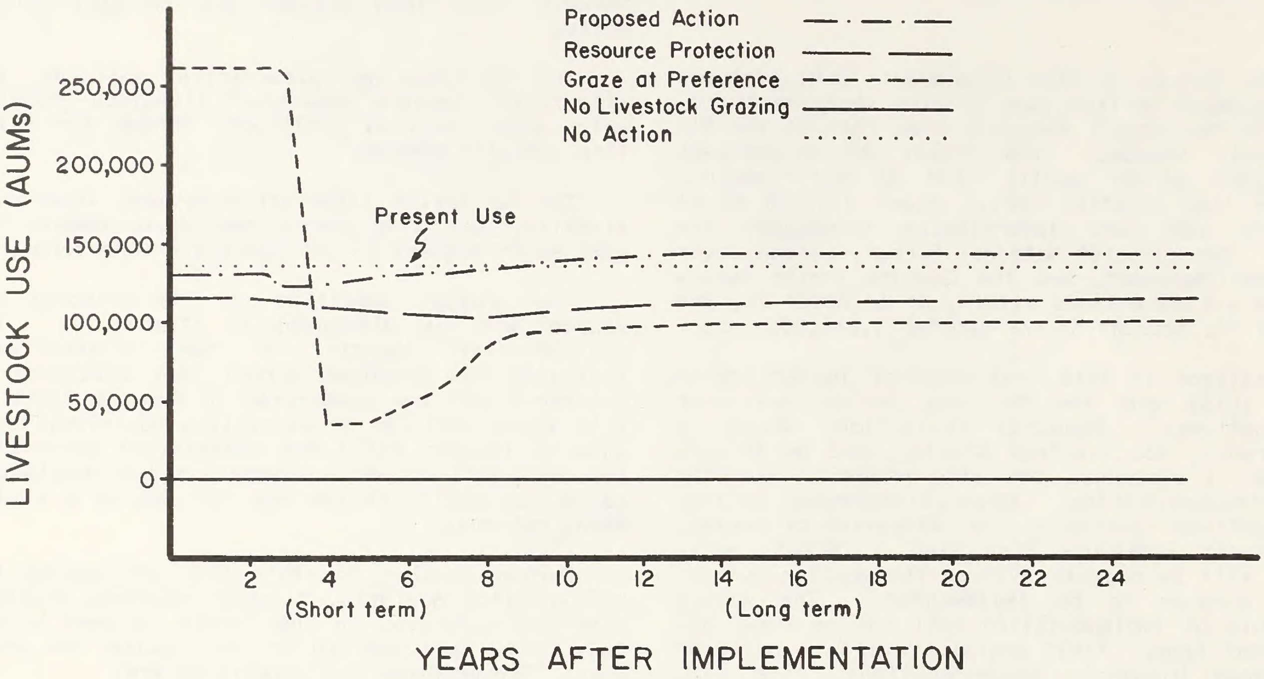
3. Problem: Less than good condition of many riparian and wetland areas.
   Objective: Upgrade and maintain all riparian and wetland areas in good or better condition.

4. Problem: A decline in livestock use in the Schell RA from historic authorized grazing use levels (active preference).
   Objective: Maximize livestock based on sustained yield of the forage resource.

5. Problem: Reduction of wild horse numbers below potential population levels.
   Objective: Maximize wild horse numbers based on sustained yield of the forage resource.

The No Action and Graze at Preference alternatives meet none of the objectives. The Resource Protection alternative meets 3 of the objectives completely, improper utilization, reasonable numbers of wildlife and protection of riparian-wetland areas. The No Grazing alternative meets problems 1, 2, 3, and 5 totally (improper utilization, wildlife, riparian-

Summary Figure 1. Graphic display of changes in livestock use due to implementation of alternatives for the Schell Resource Area grazing management program.



wetlands, wild horses). The Proposed Action meets problem 1 (improper utilization) completely, and partially meets objectives to problems 2, 3, 4, and 5 (wildlife, riparian-wetlands, livestock, and wild horses, respectively).

SCOPING COMMENTS

Scoping meetings were held in April 1981 in Pioche, Ely, Baker, and Reno, Nevada, to elicit public opinion concerning the Proposed Action and alternatives. Numerous additional contacts were made before and after the scoping meetings with various interested federal, state, and local agencies and other interest groups. Five major areas of concern or controversy dominated the comments. Environmental groups were concerned that the Schell RA was presently being overutilized by livestock and wild horses and that continuing existing use would not solve the problem. They suggested making initial forage allocations based on the 1978-79 range survey forage production data, rather than initially licensing at present livestock use and then monitoring to determine changes. Due to a lack of soils information and long term production data, the range survey was not used to adjust use. These groups, and others, were also concerned that inadequate forage and habitat for wildlife were contributing to low wildlife numbers. This concern was especially noted for riparian and wetland areas, often extremely important for wildlife and ecosystem diversity. The ranching community was concerned that BLM was attempting to decrease the level of livestock use, a use that in many cases is several generations old in the Schell RA. Wild horse groups were concerned that wild horse management centered on horse removal, rather than positive management.

Several people did not believe that BLM would be able to fund and carry out an extensive monitoring program, judging from past performance. Another federal agency questioned the format of the No Action alternative. Many of the comments concerned the manner in which vegetation allocation was to be handled in the EIS and centered on BLM administrative decisions rather than impacts to be analyzed in the EIS.

Other alternatives that were considered for this EIS but were dropped because they were neither reasonable nor feasible in light of BLM's multiple use objectives included: maximize wild horses, maximize wildlife, maximize livestock, and a 40 to 50 percent reduction in livestock.

Summary Table 1. Grazing Impact Summary for the Schell Resource Area.

Environmental Elements	Proposed Action	Resource Protection	Graze at Preference	No Livestock Grazing	No Action
Water Quality	Short Term No significant change over present levels. Long Term No significant change over present levels.	Short Term Water quality would improve due to fencing and reduced livestock levels, but not significantly. Long Term Water quality would continue to improve.	Short Term Water quality would decline in most springs and streams due to increased numbers of livestock. Long Term Water quality would probably improve to near present levels.	Short and Long Term Water quality would improve, but not significantly, due to decreased livestock use.	Short and Long Term No change over present levels.
Soils (erosion)	Short Term Improvement in erosion in at least 23 percent of Schell RA due to sustained yield utilization - SBI.[a] Long Term Continued improvement - SBI.	Short Term Improvement in erosion in majority of the Schell RA due to sustained yield utilization and decreased livestock use - SBI. Long Term Continued improvement - SBI.	Short Term Increased erosion in over 50 percent of the Schell RA due to increased livestock use - SAI.[b] Long Term Continued greater erosion than at present in over 50 percent of Schell RA - SAI.	Short and Long Term Improvement in erosion in all of Schell RA except potentially in a few areas of wild horse concentration - SBI.	Short Term No change over present. Long Term Increased erosion in 23 percent of Schell RA in downward trend - SAI.
Vegetation					
Livestock Condition and Apparent Trend	Short Term Improvement in at least 23 percent of Schell RA in a downward trend due to sustained yield utilization - SBI. Long Term Continued improvement - SBI.	Short Term Improvement in majority of Schell RA due to decreased livestock use and sustained yield utilization - SBI. Long Term Continued improvement - SBI.	Short Term Decline in over 50 percent of Schell RA due to increased livestock use - SAI. Long Term Gradual improvement in most areas but still lower than at present - SAI.	Short and Long Term Improvement in the entire Schell RA due to removal of livestock - SBI.	Short Term Little change over present. Long Term Decline in 23 percent of Schell RA presently in a downward trend - SAI.
Riparian and Wetland Areas	Short Term Improvement in about 250 ac of riparian habitat due to fencing. Long Term Additional improvement but the area is not quantifiable.	Short Term Improvement in 750 ac of riparian and 11,700 ac of wetland habitat due to fencing or other improvement - SBI. Long Term Additional improvement but the area is not quantifiable.	Short Term Decline in all riparian and wetland areas due to increased livestock use - SAI. Long Term No, or very little, improvement from short term - SAI.	Short and Long Term Improvement in all riparian and wetland areas due to removal of livestock - SBI.	Short and Long Term No change over present.
Poisonous Plants and Sensitive Plants	Short and Long Term No significant impacts.	Short and Long Term No significant impacts.	Short Term Potential for increased poisonous plants and destruction of some sensitive plants by heavy grazing - SAI.	Short and Long Term No significant impacts.	Short and Long Term No significant impacts.
Livestock Grazing	Short Term Increase in livestock use of about 1 percent over present use. Long Term Increase in livestock use about 1 percent above short term use.	Short Term Decrease in livestock use of about 11 percent due to reserving forage for wildlife and reductions to achieve sustained yield - SAI. Long Term Additional AUMs (3,596) would accrue due to intensive management actions, increasing livestock use to less than 10 percent below present use.	Short Term Livestock use would decrease 31 percent from present levels due to overutilization during the first 3 years - SAI. Long Term Livestock use would increase but still be more than 10 percent below present levels - SAI.	Short and Long Term All livestock would be removed from public lands, decreasing present livestock production by 136,669 AUMs - SAI.	Short and Long Term Livestock numbers would remain at present levels, although some minor reductions would be expected in the long term.

Summary Table 1. Continued

Environmental Elements	Proposed Action	Resource Protection	Graze at Preference	No Livestock Grazing	No Action
Wildlife Big Game	Short Term Slight improvement in big game habitat condition and increases in population levels due to sustained yield utilization. Long Term Continued slight improvement.	Short Term Habitat and forage for reasonable number of all big game would be reserved and overall habitat condition would improve - SBI. Long Term Continued habitat condition improvement.	Short Term Forage and habitat condition for big game would decrease due to overutilization by livestock - SAI. Long Term No significant improvement would occur, continuing the low short term levels of big game - SAI.	Short and Long Term Big game would be able to expand throughout the Schell RA due to the removal of livestock - SBI.	Short and Long Term No changes in big game populations or habitat condition are expected.
Upland Game and Waterfowl	Short and Long Term No significant impacts.	Short Term The improvement of 750 ac of riparian and 11,700 ac of wetland habitat due to fencing or other actions would benefit upland game and waterfowl. Meadows would improve due to decreased livestock use - SBI. Long Term Continued improvement in habitat for upland game and waterfowl.	Short Term Overutilization of all habitats, especially in 3,265,000 ac where it would be most severe, would decrease habitat condition and therefore populations of upland game and waterfowl - SAI. Long Term Some improvement would occur, but habitat still would be degraded in most of the Schell RA from present levels.	Short and Long Term All habitats would improve due to the removal of livestock use - SBI.	Short and Long Term No change in population levels or habitat condition would occur.
Nongame	Short Term Nongame habitat would improve due to fencing of streams and wetlands and primarily due to habitat improvement in at least 23 percent of the Schell RA due to sustained yield utilization and intensive grazing management - SBI. Long Term Continued improvement in nongame habitat.	Short Term All habitats for nongame wildlife would improve due to livestock reductions, sustained yield utilization and fencing or other improvement of 750 ac of riparian and 11,700 ac of wetland habitat - SBI. Long Term Continued improvement in nongame habitat.	Short Term Habitat condition would decline in 3,265,000 ac due to increased livestock use for 3 years - SAI. Long Term Some recovery would occur, but habitat and population would still be below present levels.	Short and Long Term Habitat condition would improve throughout the area, with increased populations of nongame wildlife, due to the elimination of livestock grazing - SBI.	Short and Long Term No major changes over present conditons would occur.
Aquatics	Short Term Fencing would improve 9.8 mi of fish stream - SBI. Increased livestock use would decrease habitat condition on 5 mi of fish stream - SAI. Long Term Additional streams would probably be improved.	Short Term Fencing or other techniques would improve 31.7 mi of fish streams - SBI. Long Term Additional streams would be improved if their habitat condition was less than good.	Short Term Twenty-two of the 26 fish streams in the area would be degraded by increased livestock use - SAI. Long Term Some improvement would occur in stream habitat quality, but present levels would still not be reached.	Short and Long Term All streams would be improved due to elimination of livestock - SBI.	Short and Long Term Stream habitat condition would remain at present levels.

Summary Table 1. Continued

Environmental Elements	Proposed Action	Resource Protection	Graze at Preference	No Livestock Grazing	No Action
Wild Horses	Short and Long Term No significant impacts. Mortality of 1-2 percent would be expected during period roundups to maintain present levels of use.	Short Term The Antelope Herd would be reduced by 68 horses (27%) - SAI. Additional horses would be removed from other herd units, possibly resulting in significant losses to some herds - SAI. About 1 or 2 horses would die during roundup activities. Long Term No significant impacts.	Short and Long Term All wild horses would be removed from the Schell RA - SAI. About 5-10 horses would die during roundup and holding.	Short and Long Term Wild horses would be allowed to maximize at about 2,000 as forage would be available due to elimination of livestock - SBI.	Short and Long Term Population levels would remain at about present levels as periodic roundups would remove excess animals. A 1-2 percent mortality during roundup would be expected.
Recreation	Short and Long Term Slight increase in fisherman days, increase of 74 hunter days per year, and slight increases in camping and ORV use.	Short and Long Term Slight increase in fisherman days, increase of 7,000 hunter days per year and attendant increases in camping and ORV use - SBI.	Short and Long Term At least a 10% reduction in hunter days is expected - SAI.	Short and Long Term Slight increases in fisherman days, increase of 7,000 hunter days and attendant increases in camping and ORV use - SBI.	Short and Long Term No major changes over present use patterns.
Cultural Resources	Short and Long Term Little significant change over present conditions.	Short and Long Term Reduced chance of loss of cultural resources due to decreased livestock use.	Short Term Increased chance for loss of cultural resources due to increased livestock use. Long Term Decreased livestock use would decrease the chance for significant adverse impacts.	Short and Long Term Reduced potential for loss of cultural resources due to decreased livestock use.	Short and Long Term No major changes from present levels of impact.
Paleontology	Short and Long Term No significant impacts.	Short and Long Term No significant impacts.	Short and Long Term The potential for the loss of scientifically valuable fossils is increased due to grazing at preference - SAI.	Short and Long Term No significant impacts.	Short and Long Term No significant impacts.
Economics Ranch Operations	Short Term No significant impacts. Long Term Sheep operators would have a 5 percent increase in net income if water developments and seedings were placed totally on their allotments - SBI. No other ranch size would be significantly affected by this alternative.	Short Term Small and medium sized cattle ranches would be reduced 6 and 8 percent in net income by livestock reduction - SAI. All ranch classes would be reduced from 7 to 21 percent by livestock reductions and a period of rest - SAI. Some ranchers would go out of business. Long Term Medium sized cattle ranches would be reduced 6 percent in net income without a period of rest - SAI. All ranches except sheep operators would be reduced 7 to 22 percent by a period of rest - SAI.	Short Term Many ranchers would be out of business. All ranch size classes would be significantly reduced (6 to 20 percent) in net income without water or seeding development - SAI. Only small cattle ranches would be significantly adversely affected if water and seeding developments were maximized on these allotments - SAI. Long Term Net income would probably increase but is not quantifiable.	Short and Long Term Most ranchers would go out of business. Sheep operations would be the least affected but net cash income would still be decreased by 26 percent from present levels; cattle operators would be decreased from 18 to 58 percent - SAI.	Short and Long Term No significant changes from present conditions.

Summary Table 1. Continued

Environmental Elements	Proposed Action	Resource Protection	Grazing at Preference	No Livestock Grazing	No Action
Economics Regional	Short and Long Term No significant impacts.	Short Term Significant (5 percent) reductions would occur in the livestock and food and feed grain sectors without a period of rest, wholesale and retail sales would also be significantly reduced with a period of rest - SAI.	Short Term Significant decreases in employment and sales in the livestock and food and feed grain sectors would occur by the end of short term - SAI. Long Term Significant adverse impacts would probably continue.	Short and Long Term Changes in livestock and food and feed grain sectors would be greater than 50 percent from present levels - SAI.	Short and Long Term No significant changes from present conditions.
Social Ranching Community	Short and Long Term Little significant impact but the overall increase in livestock use due to intensive grazing management would benefit ranchers and the rancher-BLM relationship.	Short and Long Term Livestock reductions for wildlife would cause a deterioration in relationships between ranchers and BLM - SAI.	Short and Long Term Relationships between ranchers and BLM would deteriorate after reductions in livestock use are made. Some ranchers would be forced out of business - SAI.	Short and Long Term The loss of grazing on public land would force most ranchers out of business and cause them to leave the area in search of employment - SAI.	Short and Long Term Ranchers would not be satisfied with the status quo, relationship with BLM would deteriorate - SAI.
Local Community	Short and Long Term No significant impacts.	Short and Long Term Adverse impacts to ranchers would create opposition to BLM policies in the local community - SAI.	Short and Long Term The overall relationship between the local community and BLM would deteriorate - SAI.	Short and Long Term The loss of most of the local ranching would result in strong opposition from the local community, as well as lifestyle and leadership changes - SAI.	Short and Long Term No significant impacts.
Regional and National	Short and Long Term No significant impacts.	Short and Long Term Most wild horse, wildlife, and environmental groups would support this alternative - SBI.	Short and Long Term Wild horse, wildlife, and environmental groups would not favor this alternative due to adverse impacts to multiple use management - SAI.	Short and Long Term Enhanced opportunities for wild horses and wildlife would generally be viewed favorably, although the loss of ranching would be considered adverse by most regional and national groups. Overall impact would be beneficial - SBI.	Short and Long Term Dissatisfaction with present policies by wild horse, wildlife, and environmental groups, especially existing use of livestock, would cause a deterioration of relationships between these groups, BLM, and ranchers - SAI.

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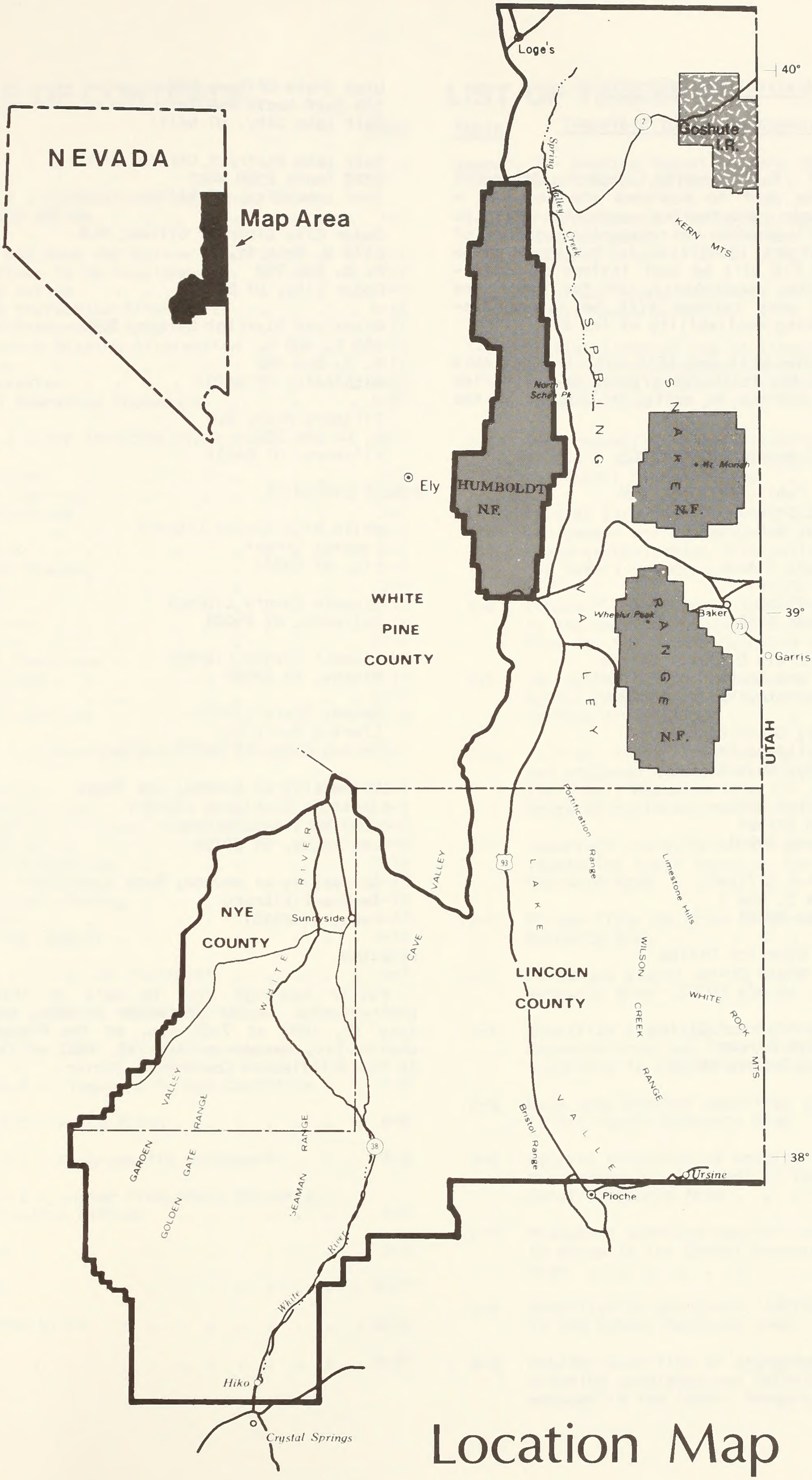
[a] SBI = Significant Beneficial Impact.

[b] SAI = Significant Adverse Impact.



Location Map

Availability of Draft

Environmental Impact Statement

The Draft Environmental Impact Statement (DEIS) will be sent to everyone who requests a copy and their substantive comments will be treated in a comments and responses section of the FEIS. Others identified in the Preparation Plan for this EIS will be sent letters of notification regarding availability of the Draft and Hearings. A news release will be issued statewide concerning availability of the EIS.

Copies of the DEIS and FEIS will be available for review at the following offices and libraries (* indicates address to write for copies of the EIS).

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HEARINGS

Public hearings will be held on this Draft Environmental Impact Statement in Reno, Nevada on July 12, 1982 at 7:00 p.m. at the Pioneer Inn, and in Ely, Nevada on July 13, 1982 at 7:00 p.m. in the Bristlecone Convention Center.

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CHAPTER 1

ALTERNATIVES INCLUDING THE PROPOSED ACTION

PURPOSE AND NEED FOR ACTION

The purpose of this Environmental Impact Statement (EIS) is to analyze the potentially significant environmental impacts of implementing a grazing management program in the Schell Resource Area (RA) of the Ely District, Nevada. This EIS is being prepared in compliance with Section 102(2) of the National Environmental Policy Act of 1969. It will follow recent direction as outlined in the Council of Environmental Quality Regulations of November 29, 1978. This EIS was written by BIO/WEST, Inc., under contract to, and with considerable assistance from, the Bureau of Land Management (BLM). Please consult Glossary and Acronym sections for definitions of key terms.

To comply with the decision in a 1974 lawsuit brought against BLM by the Natural Resources Defense Council, site-specific EISs must be written by the Agency on the impacts of grazing on public land. The grazing management program being proposed by BLM for the Schell RA is derived from the Schell Management Framework Plan (MFP) for use of public lands. The portions of the MFP-2 involving grazing are the proposed action for this EIS. Table 1-1 displays a summary of the appropriate MFP recommendations. Following the EIS process, the Ely District Manager will issue his decisions on the grazing program to be employed as part of MFP-3.

ALTERNATIVES TO BE CONSIDERED

During Scoping for this EIS, as well as through the MFP conflict analysis process, five major resource problems have been identified in the Schell RA. Objectives for eliminating each of these problems were then developed. The problems and objectives are:

1. Problem: Improper utilization of the vegetation resource occurring on portions of the Schell RA.
Objective: Manage the vegetation resource and its uses to attain utilization rates not to exceed those recommended by the Nevada Rangeland Monitoring Task Force for sustained yield (45 percent for shrubs, 55 percent for grasses and forbs).

2. Problem: A decline in historic wildlife numbers and crucial habitat that is unprotected.
Objective: Attain and maintain habitat for reasonable numbers of wildlife, reestablish bighorn, pronghorn antelope, and elk on historic ranges, and protect crucial wildlife habitat.

3. Problem: Less than good condition of many riparian and wetland areas.
Objective: Upgrade and maintain all riparian and wetland areas in good or better condition.

4. Problem: A decline in livestock use in the Schell RA from historic authorized grazing use levels (active preference).
Objective: Maximize livestock based on sustained yield of the forage resource.

5. Problem: Reduction of wild horse numbers below potential population levels.
Objective: Maximize wild horse numbers based on sustained yield of the forage resource.

The alternatives analyzed in this EIS include Proposed Action, Resource Protection, Graze at Preference, No Livestock Grazing, and No Action. These alternatives will be compared on the basis of how well they resolve the 5 resource problems identified for the Schell RA. Obviously, meeting all the objectives in one alternative may not be possible due to the level of range improvement funding available. Therefore, the alternatives are structured to favor certain resource objectives over others and thus provide the required range of assessment for a grazing EIS.

This EIS will be completed in September 1982. The MFP-3 decision on the grazing management program to be implemented on the Schell RA will be made in 1983, and implementation of any livestock adjustments would begin in 1984. Those management actions scheduled for the short term would be implemented within 5 years and for the long term within 20 years.

PROPOSED ACTION

The Ely District of the BLM proposes to implement a grazing management system on the Schell RA to help solve resource problems. The proposals contained in this alternative were derived from MFP-2 for the Schell RA and were considered in light of present funds available for resource management. Table 1-2 lists the allotments on the Schell RA, problems in the allotments, allotment size, and present grazing characteristics. The 5 problems are those discussed above. They are: (1) Improper utilization, (2) Declining wildlife, (3) Poor condition of riparian and wetland areas, (4) Declining livestock numbers, and (5) Artificially controlled wild horses. The following discussion explains the proposals to be implemented in the short term (5 years) and long term (20 years) and which problems they will help alleviate.

Grazing by livestock, wildlife, and wild horses would continue at existing levels except where specific proposals change those levels.

Short Term Management Actions

1. Initially, license livestock use at the past 3-year (1977-1979) average licensed use level, or 136,669 AUMs. Increases in this level

Table 1-1. MFP recommendations affecting rangeland management in the Schell Resource Area.

MFP Recommendations	Conflicting MFP-1 Recommendations	(Multiple Use) MFP-2 Recommendations	Resource Trade-Offs
1. Provide forage for reasonable numbers of wildlife and increased numbers of wild horses and livestock.	1. There is not enough available forage to support all animals at increased levels. There is not enough information on the area to accurately recommend a stocking level among users.	1. Continue to graze all large herbivores at existing levels. Implement a monitoring program to determine the correct level(s) of use between users.	1. During the first 3 years that studies are being implemented some range that is overstocked will continue to deteriorate. During the same time, ranges that are understocked will improve. This may place an economic burden on operators wishing to increase their herd. Wildlife and wild horses will benefit on the understocked range and will be negatively impacted on the overstocked range.
2. Introduce resident herds of Bighorn Sheep, Antelope and Elk into historic range.	2. There is a lack of forage to meet this additional demand. There are potential problems with disease transmittal from domestic sheep to bighorn. Recommendation would limit the kinds of range improvements that could be installed for livestock management.	2. Cooperate with NDOW to facilitate reintroduction of these big game species, once studies show that there is forage in excess of existing demand. Prepare an HMP prior to any introduction. No bighorn sheep are to be introduced into areas where domestic sheep currently graze. When planning range improvements, the potential for introductions will be considered. In areas designated for elk introductions encourage sheep grazing in lieu of cattle grazing.	2. Fewer areas will be available for reintroduction.
3. Protect and improve the key/crucial areas of big game habitat and remove livestock and wild horses from these areas.	3. Recommendation limits construction of range improvements for livestock management, i.e., vegetation conversions, fences, etc. Limits ability to provide forage to increase livestock and wild horses.	3. Insure that the key/crucial areas are protected from any impact that would lessen their ability to support big game during the critical period. Livestock and wild horses will continue to graze these areas unless studies show that their presence is causing an adverse impact.	3. Less area will be available for vegetation conversion. Constrains the placement of other range improvements. There will still be some competition between big game and wild horses and livestock on these areas.

Table 1-1. Continued

MFP Recommendations	Conflicting MFP-1 Recommendations	(Multiple Use) MFP-2 Recommendations	Resource Trade-Offs
4. Fence 32 miles of streams with fair or poor bank cover or stability. Fence and exclude livestock grazing on 11,700 acres of wetlands and riparian areas.	4. Recommendation results in a loss of availability of water for use by livestock and wild horses and a loss of AUMs for livestock. Wild horses would lose the use of the area.	4. Fence up to ten miles of the most critical condition streams. Fences are not to exceed 1/2 mile in length in one stretch. Big game, livestock or wild horses are not to be excluded from adequate water sources. Implement a grazing program on the remaining streams to help improve their condition. Fence the larger areas of wetland/riparian lands. Continue grazing of these areas by livestock under a system which will benefit the vegetation and the wildlife dependent upon it.	4. The streams that are not fenced may not improve or improve at much slower rate than the fenced streams. The fenced wetland/riparian areas will provide better wildlife habitat but not as much as it would if livestock were excluded. Wild horses would not be able to use the fenced areas and may impact the surrounding areas.

Table 1-2. Allotment characteristics in the Schell Resource Area. Refer to Allotment Map for reference.

Allotment	Problem/ Objectives[a]	Federal Acres	Existing Periods of Use	Grazing Preference (AUMs)	3 yr. avg. Licensed Use (AUMs)	% Grazing Preference Used[b]	Wildlife Demand (AUMs)[c]	Reasonable No WL Demand (AUMs)	Wild Horse Demand (AUMs)
Becky Springs 0101	1,2,4,5	40,621	11/1-6/30	3,842	669	17%	25 (D) 48 (A) 73 (T)	59 (D) 83 (A) 142 (T)	152
Goshute Mtn. 0102	1,4,5	5,693	1/1-4/7	465	417	90%	27 (A) 27 (T)	26 (A) 26 (T)	36
Deep Creek 0103	1,4,5	23,932	3/1-2/28	1,722	1,179	68%	51 (A) 51 (T)	48 (A) 48 (T)	591
Chin Creek 0104	1,2,4,5	148,017	3/1-2/28	13,115	2,766	21%	283 (D) 398 (A) 681 (T)	1143 (D) 394 (A) 1537 (T)	1411
Sampson Creek 0105	1,2,4,5	13,212	3/1-6/30	1,592	796	50%	101 (D) 4 (A) 105 (T)	169 (D) 4 (A) 173 (T)	123
Tippett 0106	1,2,4,5	213,198	3/1-2/28	14,455	7,228	50%	2059 (D) 319 (A) 2378 (T)	7491 (D) 310 (A) 7801 (T)	655[d]
Tippett Pass 0107	2,3,4,5	77,161	3/1-2/28	8,177	501	6%	82 (D) 176 (A) 258 (T)	563 (D) 185 (A) 748 (T)	56
Red Hills 0108	2,3,4	35,489	10/16-12/24	2,600	821	32%	27 (D) 56 (A) 83 (T)	88 (D) 63 (A) 151 (T)	--
Mill Spring 0109	2,4,5	5,587	4/1-9/30	418	252 (1 yr only)	60%	48 (D) 5 (A) 53 (T)	328 (D) 5 (A) 333 (T)	--[d]
Pleasant Valley 0110	1,2,4,5	5,113	4/1-9/30	405	100	25%	2 (D) 2 (T)	12 (D) 12 (T)	--[d]
Muncy Creek 0111	2,3,4	207,906	3/1-2/28	12,384	5,929	48%	467 (D) 320 (A) 10 (BH) 797 (T)	1946 (D) 364 (A) 19 (BH) 2329 (T)	--
Indian George 0112	2,4,5	35,683	11/9-5/5	2,860	2,573	90%	25 (D) 133 (A) 158 (T)	179 (D) 149 (A) 328 (T)	--[d]
Meadow Creek 0113	2,4	8,273	3/1-2/28	445	223	50%	10 (D) 4 (A) 14 (T)	38 (D) 5 (A) 43 (T)	--
Bassett Creek 0114	2,3,4	7,328	3/1-2/28	591	296	50%	18 (D) 18 (T)	35 (D) 35 (T)	--
Devils Gate 0115	2,4,5	17,686	11/15-5/2	1,810	695 (2 yr ave)	38%	8 (D) 60 (A) 1 (BH) 69 (T)	46 (D) 68 (A) 1 (BH) 115 (T)	--
Taft Creek 0116	1,2,3,4	28,294	4/15-2/28	1,831	711	39%	158 (D) 12 (A) 170 (T)	311 (D) 14 (A) 325 (T)	--
Smith Creek 0117	1,2,3,4	68,072	11/16-9/15	3,989	3,428	86%	55 (D) 210 (A) 29 (BH) 294 (T)	316 (D) 235 (A) 55 (BH) 606 (T)	--
Stephens Creek 0118	1,2,3,4	3,784	6/1-10/31	318	115	36%	130 (D) 130 (T)	255 (T) 255 (T)	--
Cleveland Ranch 0119	1,2,3,4	11,656	5/1-7/31	1,021	696	68%	236 (D) 34 (A) 270 (T)	464 (D) 39 (A) 503 (T)	--
Negro Creek 0120	1,2,3,4	31,985	3/1-2/28	3,727	2,357	63%	11 (D) 119 (A) 130 (T)	78 (D) 135 (A) 213 (T)	--
Bastian Creek 0121	2,4	13,527	3/1-2/28	1,778	226	13%	55 (A) 55 (T)	62 (A) 62 (T)	--
D - X 0122	2,4	3,611	4/1-4/30	277	227	82%	34 (D) 34 (T)	233 (D) 233 (T)	

Table 1-2. Continued

Allotment	Problem/ Objectives^{a}	Federal Acres	Existing Periods of Use	Grazing Preference (AUMs)	3 yr. avg. Licensed Use (AUMs)	% Grazing Preference Used^{b}	Wildlife Demand (AUMs)^{c}	Reasonable No WL Demand (AUMs)	Wild Horse Demand (AUMs)
Sacramento Pass 0123	1,2,4	21,843	11/1-5/31	1,694	401	24%	104 (D) 42 (A) 146 (T)	703 (D) 47 (A) 750 (T)	—
Strawberry Creek 0124	1,2,4	5,992	6/16-9/15	585	345	59%	58 (D) 58 (T)	286 (D) 286 (T)	—
Baker Creek 0125	2,4	55,515	10/15-6/18	4,313	2,910	67%	69 (D) 30 (A) 99 (T)	135 (D) 42 (A) 177 (T)	—
Majors 0126	2,3,4	99,193	4/16-10/31	12,535	6,268	50%	267 (D) 120 (A) 7 (E) 394 (T)	672 (D) 136 (A) 30 (E) 838 (T)	—
Willard Creek 0127	1,2,3,4	10,246	4/15-11/30	1,132	566	50%	37 (D) 37 (T)	107 (D) 107 (T)	—
Scotty Meadows 0128	1,2,4	17,322	6/1-9/30	1,227	748	61%	6 (D) 16 (A) 22 (T)	29 (D) 35 (A) 64 (T)	—
Willow Springs 0129	2,4	84,299	12/1-5/31	6,608	1,914	29%	260 (D) 48 (A) 18 (E) 326 (T)	618 (D) 106 (A) 80 (E) 804 (T)	—
South Spring Valley 0130	2,3,4,5	79,323	4/1-9/30	6,329	3,165	50%	50 (D) 73 (A) 123 (T)	113 (D) 77 (A) 190 (T)	^{d}
Chokecherry 0131	3,4	32,334	10/16-5/31	3,408	1,748	51%	33 (A) 33 (T)	58 (A) 58 (T)	—
Cottonwood 0132	1,2,4,5	49,975	11/1-5/31	4,106	2,345	57%	50 (D) 35 (A) 85 (T)	119 (D) 77 (A) 196 (T)	239
Hamblin Valley 0133	1,2,3,4,5	105,831	11/1-5/31	8,177	4,231	52%	516 (D) 86 (A) 602 (T)	915 (D) 161 (A) 1076 (T)	523
N. Chokecherry 0134	2,3,4	8,692	3/1-6/15	641	364	57%	8 (A) 8 (T)	15 (A) 15 (T)	—
McCoy Creek 0135	2,3,4	5,289	3/1-2/28	508	254	50%	45 (D) 45 (T)	89 (D) 89 (T)	—
Fox Mountain 1001	1,2,3,4,5	75,436	11/24-5/15	6,680	2,301	34%	50 (D) 50 (T)	119 (D) 119 (T)	39
Narrows 1002	4,5	6,909	12/26-1/25	535	367	69%			—^{d}
Oreana Springs 1003	1,2,4,5	78,646	9/1-5/31	3,433	2,369	69%	23 (D) 23 (T)	87 (D) 87 (T)	53
Timber Mtn. 1004	2,4,5	19,732	3/1-4/15	965	435 (2 yrs Only)	45%	7 (D) 7 (T)	15 (D) 15 (T)	18
Irish Mtn. 1006	2,4	70,861	3/1-2/28	2,915	1,458	50%	118 (D) 118 (T)	188 (D) 188 (T)	—
N. Hiko-Six Mile 1007	1,2,4	14,625	12/1-2/28	543	463	85%	2 (D) 2 (T)	15 (D) 15 (T)	—
S. Hiko-Six Mile 1008	2,4	33,018	3/1-2/28	858	617	72%	19 (D) 19 (T)	23 (D) 23 (T)	—
White River 1009	4	4,722	11/1-3/15	405	96	24%			—
Forest Moon 1010	1,2,4,5	99,968	10/6-8/31	3,980	2,030	51%	939 (D) 939 (T)	1491 (D) 1491 (T)	39
Middle Coal Valley 1011	1,2,4	24,826	9/11-5/31	1,138	1,060	93%	2 (D) 2 (T)	3 (D) 3 (T)	—^{d}
Pine Creek 1012	1,2,4	28,598	5/1-10/15	2,207	2,057	93%	98 (D) 98 (T)	155 (D) 155 (T)	—
Bird Springs 1013	2,4	23,192	3/1-2/28	736	420	57%	10 (D) 10 (T)	21 (D) 21 (T)	—

Table 1-2. Continued

Allotment	Problem/ Objectives[a]	Federal Acres	Existing Periods of Use	Grazing Preference (AUMs)	3 yr. avg. Licensed Use (AUMs)	% Grazing Preference Used[b]	Wildlife Demand (AUMs)[c]	Reasonable No WL Demand (AUMs)	Wild Horse Demand (AUMs)
Coal Valley 1014	1,4	25,978	4/1-8/31 11/1-2/28	848	604	71%			--
Cottonwood 1015	1,2,4	42,172	3/1-2/28	3,016	1,229	41%	209 (D) 209 (T)	332 (D) 332 (T)	--
Needles 1016	2,4,5	100,311	12/1-3/14	3,617	2,905	80%	21 (D) 21 (T)	37 (D) 37 (T)	52
Wildhorse 1017	2,4	18,014	3/1-2/28	315	158	50%	58 (D) 58 (T)	92 (D) 92 (T)	--
Batterman Wash 1018	1,2,3,4,5	39,878	11/10-1/31 3/26-4/6	2,093	1,072	51%	203 (D) 203 (T)	323 (D) 323 (T)	--[d]
Seaman Springs 1019	2,4,5	23,560	1/26-4/13	1,619	554	34%	3 (D) 3 (T)	19 (D) 19 (T)	35
W. Timber Mtn. 1020	2,4	10,252	12/6-1/25	735	508	69%	4 (D) 4 (T)	13 (D) 13 (T)	--[d]
Worthington Mtn. 1021	2,4	93,425	12/1-5/31	6,298	3,845	61%	115 (D) 115 (T)	182 (D) 182 (T)	--
Hardy Springs 1022	1,2,4,5	108,331	10/1-5/15	5,746	3,037	53%	663 (D) 663 (T)	1084 (D) 1084 (T)	--[d]
Sunnyside 1023	1,2,3,4,5	219,519	3/1-2/28	8,787	3,390	39%	166 (D) unknown (E) 166 (T)	347 (D) 110 (E) 457 (T)	89
Dry Farm 1024	1,2,4,5	17,532	6/1-8/31	733	644 (2 yr. average)	88%	127 (T) 127 (T)	201 (T) 201 (T)	--[d]
E. Water Gap 1025	1,2,4	29,883	9/1-11/31	1,209	510	42%	1 (D) 1 (T)	2 (D) 2 (T)	--[d]
W. Water Gap 1026	1,2,4	6,357	9/1-10/9	460	230	50%	106 (D) 106 (T)	168 (D) 168 (T)	--
Crescent 1028	2,4	78,442	12/11-4/14	2,245	465	21%	125 (D) 125 (T)	199 (D) 199 (T)	--
Reserved for Wildlife 1031	2,4,5	23,875	None				181 (D) 181 (T)	287 (D) 287 (T)	--
Uhalde Coal Valley 1032	2,4	5,173	12/1-5/31	(Combined with Worthington Mountain)			--	--	--
Pahroc 1052	1,2,4	19,008	10/1-6/15	4,773	3,752	79%	7 (D) 7 (T)	17 (D) 17 (T)	--
Geyser Ranch 1101	2,5	233,341	3/1-2/28	12,108	16,619	137%	1027 (D) 150 (A) 1177 (T)	2398 (D) 163 (A) 2561 (T)	389
Grassy Mtn. 1102	1,2,4	4,072	4/1-12/31	200	201	100%	15 (D) 15 (T)	36 (D) 36 (T)	1[d]
Wilson Creek 1201	1,2,3,4,5	1,077,994	3/1-2/28	53,942	25,809	48%	8676 (D) 175 (A) 8851 (T)	15876 (D) 230 (A) 16106 (T)	1079
Total		4,239,352		262,224	136,669	52%	18216 (D) 2847 (A) 40 (BH) 25 (E) 21128 (T)	41270 (D) 3336 (A) 75 (BH) 110 (E) 44791 (T)	5581

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[a] Problems listed for allotments vary considerably in severity; not all problems listed for an allotment are necessarily severe.

[b] Eleven allotments with a 50 percent grazing preference use have been in non-use or in the middle of an operation change, therefore their use was set at 50 percent--the average for the Schell RA as a whole.

[c] D = deer, A = pronghorn antelope, BH = bighorn sheep, E = elk, T = total.

[d] The Seaman, Moriah, Wilson Creek and White River herd units occur within portions of these allotments; however, no or very few AUMs were included because of a low use by wild horses.

of licensed use would only be made when monitoring shows additional forage is available. This would lower active preference levels for all but 2 allotments in the Schell RA from 7 to 94 percent--a 48 percent reduction for the area as a whole (Table 1-2). The difference between licensed and preference use would be placed in suspended non-use. This proposal would aid in solving Problem 1.

2. Initially, leave wild horse use at present levels (5,581 AUMs, Table 1-2). Adjustments would be made following monitoring to achieve sustained yield utilization. Numbers of wild horses and livestock would be adjusted on a case by case basis on each allotment. This would help solve Problem 1.

3. Manage habitat to provide for existing levels of big game (mule deer, pronghorn antelope, elk, and bighorn sheep) (Table 1-2).

4. Develop 4,000 ac of multiple use seedings to increase available forage for livestock and big game. The additional AUMs would be divided into 70 percent for livestock and 30 percent for big game. Table 1-3 lists the allotments that may potentially receive the seedings. This proposal would aid in solving Problems 2 and 4.

5. Develop 2 guzzlers and 750 ac of fenced seeding for wildlife in the allotments shown in Table 1-3. These actions would help attain reasonable numbers of wildlife--Problem 2.

6. Develop 10 springs, 10 mi of pipeline, and 2 mi of fence, as shown in Table 1-3, to aid in distribution of livestock. These actions would help solve Problem 4, as well as Problem 2.

7. Develop 71.9 mi of fence to improve distribution of livestock and therefore utilization of vegetation. This action would occur in one or more of the allotments shown in Table 1-3 and would help solve Problem I.

8. Fence 9.8 mi of riparian stream habitat, including 3.0 mi on Cherry Creek, 5.0 mi on Negro Creek, and 1.8 mi on Silver Creek. These areas have the poorest bank cover and stability in the Schell RA. Fences would be constructed 100 ft on either side of the streams and have openings for wildlife, wild horse, and livestock at least every .5 mi. This action would help the riparian habitat, Problem 3.

9. Place 15 mi of fence to protect 9,700 ac of wetlands in Spring Valley. The area would continue to be grazed, but at a sustained yield level. This action would help alleviate the problem of overutilization of wetland vegetation by livestock, Problem 3.

10. Continue to manage 5 allotments under Allotment Management Plans (AMPs) and develop AMPs on an additional 12 allotments and a grazing system on one allotment as shown in Table 1-3. This would help solve all problems, expecially Problems 1 and 4. Where grazing systems are implemented, utilization exceeding 50 percent may be allowed, in conjunction with a period of rest. Grazing systems to be implemented include one or more of the following grazing treatments.

Treatment 1: Rest from livestock grazing for 2 consecutive growing seasons (approximately May 1 of one year to August 31 of the following year). Two growing seasons of rest would allow key management species to improve vigor and increase litter accumulation, seed production, and seedling establishment.

Treatment 2: Rest from livestock grazing at least once in both the spring (April 1 to May 30) and summer (June 1 to September 1) during each 3- or 4-year cycle.

Treatment 3: Graze each pasture at some time during each grazing year.

Treatment 4: Graze no pasture more than twice in the same growing season (spring or summer) during any 3- or 4-year cycle.

Treatment 5: Graze midsummer to late fall only (approximately July 16 to November 15), and rest during the spring or summer the following year. This would improve the vigor, density, and reproduction of key grass species.

Treatment 6: Provide rest from livestock grazing for 2 years, until seedlings are established, or until it is determined that a vegetation manipulation or recovery project is unsuccessful. This treatment provides the protection necessary for establishment or recovery of key management species following wildfire, prescribed burning, and seeding or spraying projects.

Treatment 7: Defer livestock grazing from early spring to midsummer each year (approximately April 1 to June 30). This would improve vigor and reproduction of key management species in each allotment.

Long Term

It is expected that actions similar to those in the short term would be implemented in the long term to further meet identified problems and objectives as funding is available. Therefore, additional seedings, water sources and fences would benefit livestock, wild horses, and wildlife. Additional streams and wetlands would probably be fenced and grazing systems developed for all areas not fenced. An additional 9 allotments would come under an AMP, 19 more allotments would have grazing systems implemented on them (Table 1-3), and existing seedings would be maintained for continued high productivity. This would leave only 19 allotments to be managed in a custodial manner. Introductions of elk, antelope and bighorn would occur in areas where forage is in excess of existing demand. Bighorn introductions would not occur in areas where domestic sheep are now being grazed. A general policy would be implemented in which natural fires would be allowed to burn on their own in many portions of the Schell RA. Fire has been recognized as a natural occurrence in the range ecosystem and fire suppression as partially responsible for many of the problems in the Schell RA (see Chapter 2 for further explanation).

Table 1-3. Initial licensed use of livestock and proposed management actions for the Proposed Action in the Schell Resource Area. The Xs indicate allotments that may get all, part, or none of the proposed management action.

		SHORT TERM								LONG TERM
Allotment	Initial Licensed Use (AUMs)	4000 ac. Seeding Multiple Use	2 Guzzlers	750 Acres WL Seeding 4.5 mi Fence	10 Springs, 10 mi Pipeline, and 2 mi Fence	71.9 mi. Fence	Stream Fence	15 mi. Fence Wetlands	A = AMP, G = Grazing System, E = Existing	A = AMP, G = Grazing System
Becky Springs	669	X			X	X			A	
Goshute Mtn.	417					X				
Deep Creek	1,179	X				X			A	
Chin Creek	2,766	X	X		X	X			A	
Sampson Creek	796	X				X				
Tippett	7,228	X	X		X	X			A	
Tippett Pass	501								A	
Red Hills	821									
Mill Spring	252									G
Pleasant Valley	100									
Muncy Creek	5,929							X	E	
Indian George	2,573									G
Meadow Creek	223									A
Bassett Creek	296									A
Devils Gate	695									G
Taft Creek	711							X	G	
Smith Creek	3,428						X		E	
Stephens Creek	115							X		
Cleveland Ranch	696							X		G
Negro Creek	2,357						X	X		G
Bastian Creek	226									A
D - X	227									
Sacramento Pass	401								E	

Table 1-3. Continued

		SHORT TERM								LONG TERM
Allotment	Initial Licensed Use (AUMs)	4000 ac. Seeding Multiple Use	2 Guzzlers	750 Acres WL Seeding 4.5 mi Fence	10 Springs, 10 mi Pipeline, and 2 mi Fence	71.9 mi. Fence	Stream Fence	15 mi. Fence Wetlands	A = AMP, G = Grazing System, E = Existing	A = AMP, G = Grazing System
Strawberry Creek	345								E	
Baker Creek	2,910									G
Majors	6,268									
Willard Creek	566									G
Scotty Meadows	748									A
Willow Springs	1,914			X			X			
S. Spring Valley	3,165								A	
Chokecherry	1,748								A	
Cottonwood	2,345								A	
Hamblin Valley	4,231								A	
N. Chokecherry	364									
McCoy Creek	254									A
Fox Mountain	2,301									G
Narrows	367									
Oreana Springs	2,369									G
Timber Mtn.	435									
Irish Mtn.	1,458					X				G
N. Hiko-Six Mile	463									G
S. Hiko-Six Mile	617					X				G
White River	96									
Forest Moon	2,030					X				A
Middle Coal Valley	1,060									G
Pine Creek	2,057					X				A

Table 1-3. Continued

		SHORT TERM								LONG TERM
Allotment	Initial Licensed Use (AUMs)	4000 ac. Seeding Multiple Use	2 Guzzlers	750 Acres WL Seeding 4.5 mi Fence	10 Springs, 10 mi Pipeline, and 2 mi Fence	71.9 mi. Fence	Stream Fence	15 mi. Fence Wetlands	A = AMP, G = Grazing System, E = Existing	A = AMP, G = Grazing System
Bird Springs	420									
Coal Valley	604									G
Cottonwood	1,229									A
Needles	2,905									
Wildhorse	158									G
Batterman Wash	1,072					X	X			G
Seaman Springs	554									
W. Timber Mtn.	508									
Worthington Mtn.	3,845									G
Hardy Springs	3,037					X			A	
Sunnyside	3,390					X			A	
Dry Farm	644					X				G
E. Water Gap	510									G
W. Water Gap	230									
Crescent	465									
Reserved for Wildlife	-									
Uhalde Coal Valley	Combined with Worthington Mtn.									
Pahroc	3,752									A
Geyser Ranch	16,619			X					E	
Grassy Mtn.	201									
Wilson Creek	25,809	X		X	X	X			A	

Cost

Table 1-4 outlines the cost of implementing the developments in the short term and long term. The budget of $775,000 for 5 years is based on present funding levels.

RESOURCE PROTECTION ALTERNATIVE

The Resource Protection Alternative has as a major goal the protection and enhancement of wildlife, scenic, and recreational opportunities within the Schell RA. This alternative includes protection of all areas from overgrazing by livestock, wildlife, or wild horses as well as protection of riparian areas. Decisions in areas of livestock-wildlife or wild horse-wildlife conflicts would favor wildlife.

Funding levels for this alternative are slightly less than those listed for the Proposed Action. The major concern of this alternative is to help solve Problem 2, Wildlife, and Problem 3, Riparian and Wetland Areas. The following are management actions to be implemented in the short and long term under this alternative.

Short Term

1. License livestock initially at levels that would provide forage for reasonable numbers of big game by reducing present use by the total wildlife demand (Table 1-2) for each allotment. This would be a 16 percent decrease (22,156 AUMs) from the past 3-year (1977-1980) average licensed use, and a 56 percent decrease from active preference (Table 1-5). Allotment reductions would range from 0 to 100 percent. This action would help solve Problem 2. Monitoring data would be available in 3 years on which to base additional proportionate adjustments of livestock and wild horses to provide for sustained yield utilization. For example, if livestock present use was 200 AUMs and wild horse use was 100 AUMs, and utilization indicated a 90 AUM decrease was required, livestock would be reduced by 60 AUMs and horses by 30 AUMs. Livestock would not be licensed above the initial level until additional forage is available above that required for reasonable numbers of wildlife and existing livestock use. This management action could result in an adjustment of livestock and horse numbers in the short term. Again, monitoring data would determine the size of the change.

2. Reduce wild horse use by 1,219 AUMs to provide for reasonable numbers of big game. This action would help solve Problem 2. Further proportionate adjustments in wild horse utilization would be made if utilization monitoring data indicate the need. Other changes could also occur due to management actions proposed in the short and long terms.

3. Seed 3,400 ac to provide a grass, forb, and browse mixture to attain additional summer deer habitat. The seedings could be placed in any of the 3 allotments shown in Table 1-5. This action would help solve Problems 2 and 4.

4. Fence or otherwise improve 31.7 mi of stream riparian habitat that was in less than good condition in the 1976 survey. Table 1-6 lists the streams and miles to be improved. The total area to be improved would be about 750 ac. The habitat improvement technique to be used depends on the individual stream. Willows, cottonwoods or other riparian plants may be planted in those areas in which riparian vegetation is presently very sparse or missing. Other improvement techniques include instream pool development, meander development to reduce velocity and increase the riparian zones or a combination of these and perhaps other techniques. These improvements would provide part of the forage to meet the demand for reasonable numbers of big game, Problem 2, as well as helping to solve Problem 3.

5. Fence 11,700 ac of wetlands, including 9,700 ac in Spring Valley, 600 ac in southern Spring Valley, and 1,400 ac around Big Springs Creek. Exclusion of livestock from these areas by such fencing would help solve Problem 3.

6. Reduce licensed livestock and wild horse use to provide forage for 300 pronghorn antelope, 400 bighorn, and 80 elk to be introduced in the allotments as shown in Table 1-5. Domestic sheep would be replaced with cattle in all areas proposed for bighorn introductions. Livestock and wild horse use could be adjusted following the introductions if utilization is not at target levels. This action would help solve Problem 2.

7. Continue to manage 5 allotments as AMPs, develop AMPs on an additional 12 allotments, and develop a grazing system on one allotment, as in the Proposed Action (Table 1-3). This would help solve Problem 4.

8. Institute a 2-month period of rest during the spring on each allotment that does not have an AMP or grazing system proposed for it. This would not affect AUMs. Table 1-7 lists the period of rest. Allotments receiving AMPs or grazing systems in the long term would have a period of rest for the short term.

Long Term

In the long term, monitoring would continue to provide utilization data on which to base adjustments of grazing use. Additional range improvements in the long term would be implemented to increase the available forage for livestock and wild horses. These increases would only be allowed in areas where wildlife forage and ecosystem protection are already assured. Also, all unfenced riparian and wetland areas would be monitored and corrective action taken if conditions deteriorate. An additional 9 allotments would come under AMP management and 19 allotments under grazing systems as shown in Table 1-5. These same allotments were listed under long term implementation in the Proposed Action. Existing seedings would be maintained to keep their productivity high. A general policy would also be implemented where natural fires would be allowed to burn on their own in many portions of the Schell RA.

Cost

Table 1-4 outlines the cost of implementing the short term and long term developments. The

Table 1-4. Cost comparison for implementation of the 5 various alternatives for the Schell Resource Area.

Short Term	Proposed Action	Resource Protection	Graze at Preference	No Livestock Grazing	No Action
Land Treatment	$ 131,000	$ 122,400	$ 62,300		
Fencing	521,600	489,200[b]	497,400	$135,300[a]	
Livestock Water Development	108,000		236,000		
Seeding Maintenance			100,000		$400,000
Wild Horse Removal		13,400	46,600		
Wildlife Guzzlers	14,400			7,200	
Fence Removal				32,500	
Subtotal	$ 775,000	$ 625,000	$ 942,300	$175,000	$400,000
Long Term	$2,325,000[a]	$1,875,000	$1,543,400[a]	$525,000	$300,000[a]
Total	$3,100,000	$2,500,000	$2,485,700	$700,000	$700,000

Assumptions: $26/ac for multiple use seeding (Proposed Action); $25/ac for livestock seeding (Graze at Preference); $36/ac for wildlife seeding (Proposed Action and Resource Protection); $4600/mi for fence; $19.25/ac for seeding maintenance; $5500/mi for pipeline; $500/trough; $6000/well; $5300/spring; $19,000/reservoir; $100/head to remove horses; $7200/guzzler; $500/mi to remove fence.

[a] Includes seeding maintenance.

[b] Costs include stream improvements other than fencing.

Table 1-5. Initial licensed livestock use and management actions proposed for the Resource Protection Alternative for the Schell Resource Area. The Xs indicate allotments that may get all, part, or none of the proposed management action.

						Short Term	Long Term
Allotment	3 Year Licensed Use (AUMs)	Initial Licensed Use (AUMs)	3400 ac. Seeding	Stream and Wetlands Fence (12,450)	Wildlife Intro-ductions	Intensive Management A = AMP G = Grazing System E = Existing	Intensive Management
Becky Springs	669	613				A	
Goshute Mtn.	417	417					
Deep Creek	1,179	1,179				A	
Chin Creek	2,766	2,200				A	
Sampson Creek	796	737					
Tippett	7,228	2,256			B H	A	
Tippett Pass	501	60				A	
Red Hills	821	753					
Mill Spring	252	0					G
Pleasant Valley	100	90					
Muncy Creek	5,929	4,397		X		E	
Indian George	2,573	2,403					G
Meadow Creek	223	194					A
Bassett Creek	296	279					A
Devils Gate	695	649					G
Taft Creek	711	556		X		G	
Smith Creek	3,428	3,116				E	
Stephens Creek	115	0		X			
Cleveland Ranch	696	463		X			G
Negro Creek	2,357	2,274		X			G
Bastian Creek	226	219					A
D - X	227	28					
Sacramento Pass	401	0				E	
Strawberry Creek	345	117				E	
Baker Creek	2,910	2,832					G

Table 1-5. Continued

						Short Term	Long Term
Allotment	3 Year Licensed Use (AUMs)	Initial Licensed Use (AUMs)	3400 ac. Seeding	Stream and Wetlands Fence (12,450)	Wildlife Intro-ductions	Intensive Management A = AMP G = Grazing System E = Existing	Intensive Management
Majors	6,268	5,824		X			
Willard Creek	566	496		X			G
Scotty Meadows	748	706					A
Willow Springs	1,914	1,436	X				
S. Spring Valley	3,165	3,098		X		A	
Chokecherry	1,748	1,723		X		A	
Cottonwood	2,345	2,244				A	
Hamblin Valley	4,231	3,809				A	
N. Chokecherry	364	357					
McCoy Creek	254	210					A
Fox Mountain	2,301	2,233			BH, A		G
Narrows	367	367					
Oreana Springs	2,369	2,306			BH, A		G
Timber Mtn.	435	427			BH, A		
Irish Mtn.	1,458	1,388			BH, A		G
N. Hiko-Six Mile	463	450			BH		G
S. Hiko-Six Mile	617	613			BH		G
White River	96	96					
Forest Moon	2,030	1,488			BH, A		A
Middle Coal Valley	1,060	1,059			BH, A		G
Pine Creek	2,057	2,057			BH, A		A
Bird Springs	420	409			BH		
Coal Valley	604	604			BH, A		G
Cottonwood	1,229	1,106			BH, A		A
Needles	2,905	2,889			BH, A		

Table 1-5. Continued

						Short Term	Long Term
Allotment	3 Year Licensed Use (AUMs)	Initial Licensed Use (AUMs)	3400 ac. Seeding	Stream and Wetlands Fence (12,450)	Wildlife Intro-ductions	Intensive Management A = AMP G = Grazing System E = Existing	Intensive Management
Wildhorse	158	124			BH		G
Batterman Wash	1,072	952		X	BH, A		G
Seaman Springs	554	539			BH, A		
W. Timber Mtn.	508	499			BH, A		
Worthington Mtn.	3,845	3,778			BH, A		G
Hardy Springs	3,037	2,616			BH, A	A	
Sunnyside	3,390	3,106			BH, A	A	
Dry Farm	644	570			A		G
E. Water Gap	510	509			BH, A		G
W. Water Gap	230	168			BH, A		
Crescent	465	391			BH, A		
Reserved for Wildlife	-	0			A		
Uhalde Coal Valley	Combined with Worthington Mtn.						
Pahroc	3,752	3,742			BH		A
Geyser Ranch	16,619	15,267	X		E	E	
Grassy Mtn.	201	180					
Wilson Creek	25,809	18,845	X	X	E, A, BH	A	
Total	136,669	114,513					

Table 1-6. Stream riparian areas to be fenced in the Resource Protection Alternative for the Schell Resource Area.

Stream Name	Length on Public Land (mi)
Bastian	1.9
Big Springs	4.0
Cherry	3.0
Frenchman	1.0
Meadow Valley	5.0
Negro	5.0
Piermont	2.0
Pine (Ridge)	2.0
Silver	1.8
Snowbank	2.5
Wilson	3.5
Total	31.7

Table 1-7. Period of rest for allotments in the Schell Resource Area, Resource Protection Alternative.

Allotment	Period of Rest	Allotment	Period of Rest
Goshute Mountain	4/1-5/31	Timber Mountain	4/1-5/31
Sampson Creek	4/1-5/31	Irish Mountain	3/15-5/15[a]
Red Hills	4/1-5/31	N. Hiko-Six Mile	3/15-5/15[a]
Mill Spring	4/1-5/31[a]	S. Hiko-Six Mile	3/15-5/15[a]
Pleasant Valley	4/1-5/31	White River	3/15-5/15
Indian George	4/1-5/31[a]	Forest Moon	4/1-5/31[a]
Meadow Creek	4/1-5/31[a]	Middle Coal Valley	4/1-5/31[a]
Bassett Creek	4/1-5/31[a]	Pine Creek	4/1-5/31[a]
Devils Gate	4/1-5/31[a]	Bird Springs	3/15-5/15
Stephens Creek	4/1-5/31	Coal Valley	4/1-5/31[a]
Cleveland Ranch	4/1-5/31[a]	Cottonwood	4/1-5/31[a]
Negro Creek	4/1-5/31[a]	Needles	4/1-5/31
Bastian Creek	4/1-5/31[a]	Wildhorse	3/15-5/15[a]
D - X	4/1-5/31	Batterman Wash	4/1-5/31[a]
Baker Creek	4/1-5/31	Seaman Springs	3/15-5/15
Majors	4/1-5/31	W. Timber Mountain	4/1-5/31
Willard Creek	4/1-5/31[a]	Worthington Mountain	4/1-5/31[a]
Scotty Meadows	4/1-5/31[a]	Dry Farm	4/1-5/31[a]
Willow Springs	4/1-5/31	E. Water Gap	4/1-5/31[a]
N. Chokecherry	4/1-5/31	W. Water Gap	4/1-5/31
McCoy Creek	4/1-5/31[a]	Crescent	3/15-5/15
Fox Mountain	4/1-5/31[a]	Uhalde Coal Valley	4/1-5/31
Narrows	3/15-5/15	Pahroc	4/1-5/31[a]
Oreana Springs	4/1-5/31[a]	Grassy Mountain	4/1-5/31

[a] Short term only.

budget of $625,000 is based on present funding levels. It is lower than the budget for the Proposed Action because fewer AUMs of livestock would be licensed; therefore, less funding from license fees would be available for range improvements.

GRAZE AT PREFERENCE ALTERNATIVE

The Graze at Preference alternative would emphasize initial livestock production on the Schell RA. Range management decisions in areas of livestock-wildlife or livestock-wild horse interactions would favor livestock. Range improvements would be limited to those that could be constructed under present levels of funding. The following are management actions to be implemented in the short and long terms.

Short Term

1. License livestock grazing at active preference, or above if present use is higher than preference. Two allotments, Geyser Ranch and Grassy Mountain, are presently grazed at 4,512 AUMs above preference (Table 1-2). Therefore, initial licensing of livestock would be 266,736 AUMs. Monitoring would be conducted and adjustments made to achieve sustained yield utilization within 3 years.

2. Remove all wild horses from the Schell RA to provide forage for livestock. This would help solve Problem 4.

3. Maintain big game at present levels.

4. Develop AMPs on 22 allotments with the objective to increase AUMs for livestock, and implement grazing systems on an additional 20 allotments (Table 1-8). Continue to manage 5 allotments under AMPs and manage the remaining allotments as custodial. These actions would help solve all problems, but primarily Problem 4.

5. Seed and fence 2,000 ac for livestock and 475 ac for multiple use (livestock and wildlife) in the Wilson Creek Allotment. These actions would help solve Problems 2 and 4.

6. Construct 84 mi of fence, 15 mi of pipeline, 15 spring developments, 6 wells, and 2 reservoirs to improve utilization and distribution of livestock in the allotments shown in Table 1-8. This action would help solve Problems 1, 2, and 4.

Long Term

In the long term, monitoring would continue to provide information on utilization on which to base adjustments of grazer numbers. Available forage and range improvements would continue to benefit livestock until active preference is reached. Additional AMPs and other intensive management would be developed on some of the remaining allotments. Existing seedings would be maintained to keep their productivity high. A general policy would also be implemented where natural fires would be allowed to burn on their own in many portions of the Schell RA.

Cost

Table 1-4 shows the costs of implementing the Graze at Preference alternative in the short term. This budget is based on present funding levels and the number of AUMs that would be licensed during the 10-year period. Funding available each year would vary depending on the amount of licensed livestock use.

NO LIVESTOCK GRAZING ALTERNATIVE

The No Livestock Grazing alternative would help solve Problems 1, 2, 3, and 5. Under the No Livestock Grazing alternative, all domestic livestock grazing on BLM-administered public land within the Schell RA would be excluded.

All forage on public lands would be available for wildlife and wild horses under this alternative. Springs or wells on public land would be maintained by BLM for wildlife, wild horses, or recreational uses as needed. Springs or streams that receive heavy use from wild horses would be fenced to protect associated riparian and wetland habitats. One guzzler would be built in either the Chin Creek or Tippett allotment for pronghorn antelope and other wildlife. About 65 mi of fence would be removed to enhance the wild and free-roaming behavior of wild horses and to provide access to forage previously used by livestock. This includes 11.5 mi from the Antelope Herd Unit, 39 mi from the Wilson Creek Herd Unit, and 14.2 mi from the Dry Lake Herd Unit. New management facilities would be built as needed to manage and enhance wild horse and wildlife use. Existing facilities would not be maintained unless they were necessary for resource uses other than livestock. Monitoring would be conducted to assure that wildlife, wild horses, or other users of public land would not create problems such as severe overgrazing and erosion. Potential problem areas would be monitored as key areas. In the long term, fences which interfere with movements of deer and pronghorn antelope would be removed.

Cost

Costs for this alternative are shown in Table 1-4. Only $175,000 would be available every 5 years since no grazing fees would be collected.

NO ACTION

Under the No Action alternative, no major grazing developments would be initiated. Existing use and season of use of livestock would remain as they are at present (Table 1-2). Present trends in vegetation would continue. The analysis of this alternative is based on the assumption that neither BLM nor ranchers in the Schell RA would alter present livestock grazing practices. Existing management facilities would be maintained (such as fences, seedings, and water developments), and BLM would determine trespass and conduct as usual their other activities related to grazing. Five allotments would continue to be managed under existing AMPs. Year-long use would continue on many allotments. Allotments with no present use due to transfer or

Table 1-8. Initial livestock licensing levels and proposed management actions in the Schell Resource Area for the Graze at Preference Alternative. The Xs indicate allotments that may get all or part of the proposed management action.

Allotment	Present Use (AUMs)	Initial Livestock Use	Horse Removal	A = AMP G = Grazing System E = Existing	Seed 2000 ac LS Use	Seed 475 ac Multiple Use	Fence 84 mi	Pipeline 15 mi Springs (15) Wells (6) Reservoirs (2)
Becky Springs	669	3,842	X	G				
Goshute Mtn.	417	465	X					
Deep Creek	1,179	1,722	X					
Chin Creek	2,766	13,115	X	A			X	
Sampson Creek	796	1,592	X					
Tippett	7,228	14,455	X	A				S
Tippett Pass	501	8,177	X	A				S
Red Hills	821	2,600						
Mill Spring	252	418	X	G			X	
Pleasant Valley	100	405	X					
Muncy Creek	5,929	12,384		E				P S
Indian George	2,573	2,860	X	A				
Meadow Creek	223	445		A				
Bassett Creek	296	591		A				
Devils Gate	695	1,810	X	A				
Taft Creek	711	1,831						
Smith Creek	3,428	3,989		E				P W S R
Stephens Creek	115	318						
Cleveland Ranch	696	1,021		G				
Negro Creek	2,357	3,727		G				
Bastian Creek	226	1,778		A				
D - X	227	277						
Sacramento Pass	401	1,694		E				W S
Strawberry Creek	345	585		E				
Baker Creek	2,910	4,313		G				S
Majors	6,268	12,535		A				P
Willard Creek	566	1,132		G				
Scotty Meadows	748	1,227		A				
Willow Springs	1,914	6,608		A				P W S
S. Spring Valley	3,165	6,329	X	A				
Chokecherry	1,748	3,408		A				
Cottonwood	2,345	4,106	X	A				
Hamblin Valley	4,231	8,177	X	A				

Table 1-8. Continued

Allotment	Present Use (AUMs)	Initial Livestock Use	Horse Removal	A = AMP G = Grazing System E = Existing	Seed 2000 ac LS Use	Seed 475 ac Multiple Use	Fence 84 mi	Pipeline 15 mi Springs (15) Wells (6) Reservoirs (2)
N. Chokecherry	364	641						
McCoy Creek	254	508		A				
Fox Mountain	2,301	6,680	X	G			X	
Narrows	367	535						
Oreana Springs	2,369	3,433	X	G			X	
Timber Mtn.	435	965	X					
Irish Mtn.	1,458	2,915		G				
N. Hiko-Six Mile	463	543		G			X	
S. Hiko-Six Mile	617	858		G				
White River	96	405						
Forest Moon	2,030	3,980	X	A			X	
Middle Coal Valley	1,060	1,138		G				
Pine Creek	2,057	2,207		A			X	
Bird Springs	420	736		G				
Coal Valley	604	848		G				
Cottonwood	1,229	3,016		A				
Needles	2,905	3,617	X				X	
Wildhorse	158	315		G				
Batterman Wash	1,072	2,093		G			X	
Seaman Springs	554	1,619	X					
W. Timber Mtn.	508	735						
Worthington Mtn.	3,845	6,298		G				P
Hardy Springs	3,037	5,746	X	A			X	R
Sunnyside	3,390	8,787	X	A			X	P
Dry Farm	644	733		G			X	
E. Water Gap	510	1,209		G			X	
W. Water Gap	230	460						
Crescent	465	2,245						
Reserved for Wildlife	-	-	X					
Uhalde Coal Valley	-	Combined with Worthington Mt.						
Pahroc	3,752	4,773		A				
Geyser Ranch	16,619	16,619	X	E				
Grassy Mtn.	201	201	X					
Wilson Creek	25,809	53,942	X	G	X	X	X	P S
Total	136,669	266,736						

change over during the past 3 years, would be estimated to have livestock use at 50 percent of preference.

Wildlife and wild horse use would remain as at present (Table 1-2). Wildlife and wild horse populations that are presently increasing or decreasing would continue that trend. Removal of wild horses would continue in order to maintain present levels.

Cost

Table 1-4 shows costs for this alternatives. Since no new range improvements are proposed, all available funds would go to maintenance of existing seedings.

IMPLEMENTATION

INTRODUCTION

The timetable for implementation of each alternative is generally the same. Initial actions, primarily adjustments in livestock and/or wild horse use, would be completed in 1984. Adjustments in livestock and wild horse levels to achieve sustained yield utilization would occur when monitoring data is available, assumed to be 3 years after implementation for analysis purposes. Monitoring information for some allotments may be available as early as 1984, hence grazing use changes may begin earlier than 1987. All short-term management actions would be developed within 5 years (1989), with the associated changes in grazing use occurring within another 5 years (1994). This allows time for grazing changes to stabilize. Likewise, long-term actions would be implemented in 20 years (2004), with another five years required for the changes in grazer use to be completed. Therefore, the short term and long term are 10 years and 25 years respectively, except for range improvement expenditures which are 5 years and 10 years respectively.

COORDINATED RESOURCE MANAGEMENT AND PLANNING

Coordinated Resource Management and Planning (CRMP) would be included as an advisory body throughout the BLM planning system for all alternatives except No Action. CRMP brings together all interests concerned with the management of resources in a given local area, such as landowners, land management agencies, resource users, wildlife groups, wild horse groups, and conservation organizations. All affected interests will be afforded the opportunity to actively participate in the planning process through CRMP, and their input will be considered before BLM makes a final decision on grazing management actions.

SELECTIVE MANAGEMENT

To implement any of the 3 alternatives excluding No Action or No Livestock Grazing, the grazing management program would be proposed for the purpose of improving or maintaining the public land resources through a selective management approach to rangeland management. This approach is based on the concept that: (1) an allotment's resource characteristics, management needs, and potential for improvement can be identified and (2) the timing and intensity of the management actions should be varied according to an allotment's identified needs and potential.

To facilitate the selective management approach, the BLM has developed 3 categories into which allotments will be grouped according to management need and objective: maintain (M), improve (I), and custodial (C). The objectives for these categories are to: (1) maintain current satisfactory condition, (2) improve current unsatisfactory condition, and (3) manage custodially, while protecting existing resource values. The following criteria pertain to the 3 categories, although allotments within each category would not have to meet all the criteria to be managed according to the category objectives:

Maintain Category Criteria

- Present range condition is satisfactory
- Allotments have moderate or high resource production potential, and are producing near their potential (or trend is moving in that direction)
- No serious resource-use conflicts or controversy exist
- Opportunities may exist for positive economic return from public investments
- Present management appears satisfactory
- Other criteria appropriate to EIS area

Improve Category Criteria

- Present range condition is unsatisfactory
- Allotments have moderate to high resource production potential and are producing at low to moderate levels
- Serious resource-use conflicts/controversy exists
- Opportunities exist for positive economic return from public investments
- Present management appears unsatisfactory
- Other criteria appropriate to EIS area

Custodial Category Criteria

- Present range condition is not a factor
- Allotments have low resource production potential, and are producing near their own potential
- Limited resource-use conflicts/controversy may exist
- Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors
- Present management appears satisfactory or is the only logical practice under existing resource conditions
- Other criteria appropriate to EIS area

After publication of the Final EIS, the allotments will be categorized using public input and the selective management criteria, the categorization of allotments will be used to guide implementation of the grazing decisions. The implementation strategy by category is as follows:

Category M Allotment

- Grazing decisions issued within 9 months.
- 2nd priority for funding rangeland improvements with appropriated funds.
- 2nd priority for development of allotment management plans.
- Prescribed flexibility of livestock operations, if appropriate, through terms and conditions of permits, leases and AMP's.
- 3rd priority for use supervision, in the absence of known unauthorized use problems.

Category I Allotment

- Grazing decisions issued within 17 months.
- 1st priority for funding rangeland improvements with appropriated funds.
- 1st priority for development of allotment management plans.
- Prescribed flexibility of livestock operations, if appropriate, through terms and conditions of leases, and AMP's.
- 1st priority for use supervision, in the absence of known unauthorized use problems.

Category C Allotment

- Grazing decisions issued within 12 months.
- 3rd priority for funding rangeland improvements with appropriated funds.
- 3rd priority for development of allotment management plans.
- Prescribed flexibility of livestock operations, if appropriate, through terms and conditions of permits, leases, and AMP's.
- 2nd priority for use supervision, in the absence of known unauthorized use problems.

Decisions will be implemented in consultation with interested groups and individuals through the CRMP process.

VEGETATION MONITORING

The vegetation monitoring system to be used in all alternatives except No Action would include measurement of utilization, actual use, climate, and range condition and trend. Monitoring was initiated in 1981 in the Schell RA so that initial livestock stocking rates could be based on these data by 1984, and then adjusted in later years as more data became available and/or if climate changes vegetative growth. Monitoring methods include:

Utilization. The BLM would use the Key Forage Plant Method--a visual estimate for judging utilization of key species by weight. In this method, the examiner divides noticeable utilization among 5 classes of use within a key area: slight (0-20 percent), light (21-40 percent), moderate (41-60 percent), heavy (61-80 percent), and severe (81-100 percent). Grazing areas would be managed for an annual utilization of 55 percent for perennial grasses and forbs, and 45 percent for shrubs.

Actual Use. Livestock operators would provide records of actual livestock use and BLM personnel would verify this information through periodic allotment checks. Use of the range by wild horses would be determined through census figures, with refinement made by season-of-use data as necessary. Actual use and season-of-use by big game animals would be determined from pellet count and aerial surveys.

Climatic Data. Annual precipitation and growing season have a marked influence on vegetation growth and production. Official weather stations and BLM and State climatic stations would provide the climatic data. These data would be used to correlate climate to plant growth determined in the utilization and trend studies.

Condition and Trend. Condition of a range site is determined by comparing composition by weight of the present plant association with that of the site's climax plant community. Trend is the direction of change in condition of the range observed over time. Changes in trend are categorized as upward, downward, or not apparent, and from 3 to 5 years of observation are needed before any trend can be detected on most range sites. Trend is measured by noting changes in the frequency of key species in key areas over time, using the Quadrat Frequency Method.

For more detailed information on these monitoring procedures, refer to the BLM's 1981 Drafts of the Nevada Range Studies Task Group Monitoring Procedures and the Bureau Monitoring Studies Manual.

The monitoring program, and CRMP input, would provide information and recommendations for the type of range management action that would be needed in a particular allotment. A partial list of possible actions are: change in livestock season of use, construction of fences, water development, vegetation removal (chaining, controlled burns) and reseeding, and livestock adjustment. One objective of the monitoring program is to determine utilization by each of the types of grazers--livestock, wild horses, or wildlife--and to quantify the differences between grazer use. The monitoring program would be an integral part of all the alternatives analyzed in this EIS except the No Action alternative.

Additional monitoring would be conducted in crucial wildlife and wild horse areas. Information gained through these and other efforts would be used in making any grazing decisions.

STANDARD OPERATING PROCEDURES

Certain requirements are inherent in the implementation of any federal action on Bureau managed lands. These requirements, or Standard Operating Procedures, are designed to mitigate impacts stemming from the construction of support facilities necessary to implement any federal action.

The following would be applied to any action resulting from the planning system.

1. Environmental review will be conducted before implementation. Depending on the impacts of this implementation on the resources, modification or abandonment of the project may be considered.

2. Compliance with wilderness guidelines on proposed projects will be in accordance with Section 603 (c) of the Federal Land Policy and Management Act (1976) which provides that until Congress acts on the BLM's wilderness suitability, recommendations for wilderness study areas or on lands still under wilderness review, the following policy will prevail: existing mining and grazing uses and mineral leasing activities may continue in the same manner and degree as was being conducted on October 21, 1976, but new or expanded existing uses will be allowed only if the impacts of these uses would not impair the area's suitability for designation as wilderness. Proposed uses and projects will be analyzed on a case-by-case basis to assure compliance with the Interim Management Policy and Guidelines for Lands Under Wilderness Review, and when applicable, the regulations in 43 CFR Part 3800, Subpart 3802, titled Exploration and Mining Wilderness Review Program. Certain exceptions to the above-stated policy which concerns valid existing rights are explained in the aforementioned documents.

3. Threatened or endangered plant or animal species clearance is required before implementation of any project. Consultation with the Fish and Wildlife Service per Section 7 of the Endangered Species Act is necessary if a threatened or endangered species or its habitat may be impacted. If there is an adverse impact, either relocation or abandonment of the project will follow.

4. Cultural resource protection requires compliance with Section 106 of the National Historic Preservation Act of 1966, Section 206 of the National Historic Preservation Act Amendments of 1980 and Section 101 (b)(4) of the National Environmental Policy Act (NEPA) of 1969. Prior to project approval, intensive field (Class III) inventories will be conducted in specific areas that would be impacted by implementing activities. Impacts to National Register of Historic Sites and National Register of Eligible Historic Sites will be assessed on a regular basis. Management decisions will be regularly reviewed and revised based on the findings of surveys and monitoring of sites.

5. Visual resource management requires all actions to be in compliance with BLM Visual Resource Management Design Procedures in BLM Manual 8400. On any project which has a visual contrast rating that exceeds the recommended maximum for the visual class zone in which it is proposed, the visual contrasts will be considered significant and mitigating measures must be examined. The ultimate decision in these cases of whether a particular project's visual impact is positive or negative, acceptable or unacceptable, and whether mitigating measures must be implemented or not, rests with the District Manager and must be made on a project-by-project basis.

6. Proposed areas of critical environmental concern will receive priority evaluation. If threatened with immediate disruption, emergency designation and protection during the land use planning process per Sections 201 and 202 of the Federal Land Policy and Management Act will be adhered to.

7. Areas which are disturbed by development of facilities will be reseeded with nonexotic species to prevent erosion and replace ground cover.

8. Deferral of livestock use will be in effect for a minimum of two growing seasons following brush control projects so vegetation may be reestablished.

9. Minimal clearing of vegetation will be accomplished from project sites requiring excavation.

10. Raptor nesting sites will be identified and protected in areas of proposed vegetation manipulation.

11. A fire management plan will be developed before any prescribed burning occurs.

12. All refuse generated by field operations in the project area will be removed to a sanitary landfill.

13. Fence construction must comply with BLM Manual 1737. Lay-down fences will be constructed in wildlife and wild horse areas if necessary and feasible. Fences in wild horse areas will be constructed to minimize interferences with normal distribution and movement patterns of the majority of animals within the herd management areas.

14. Water for wildlife will be made available at the spring source of all spring developments.

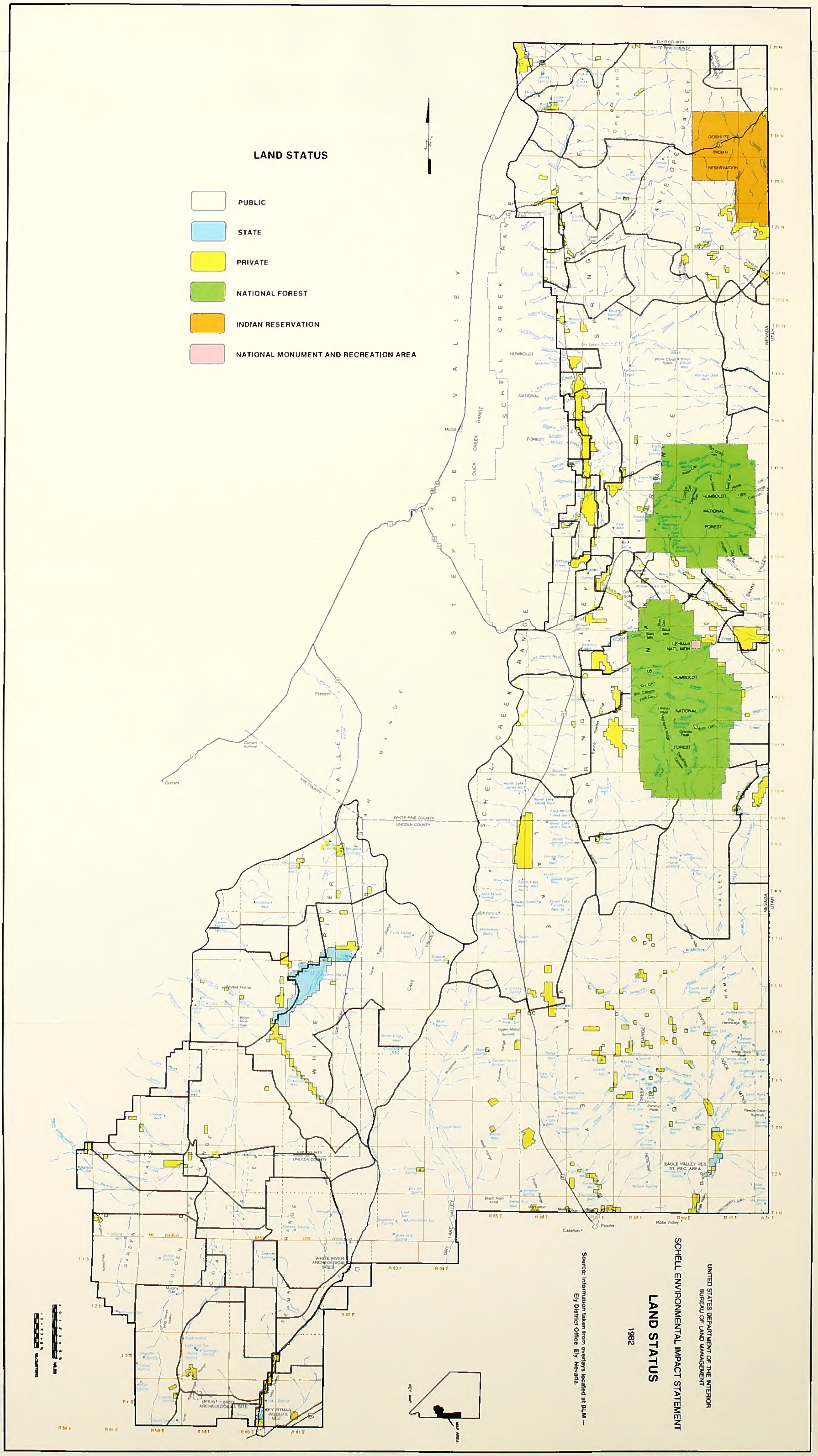
15. Water for wildlife and wild horses is to be made available at all water developments in pastures being rested.

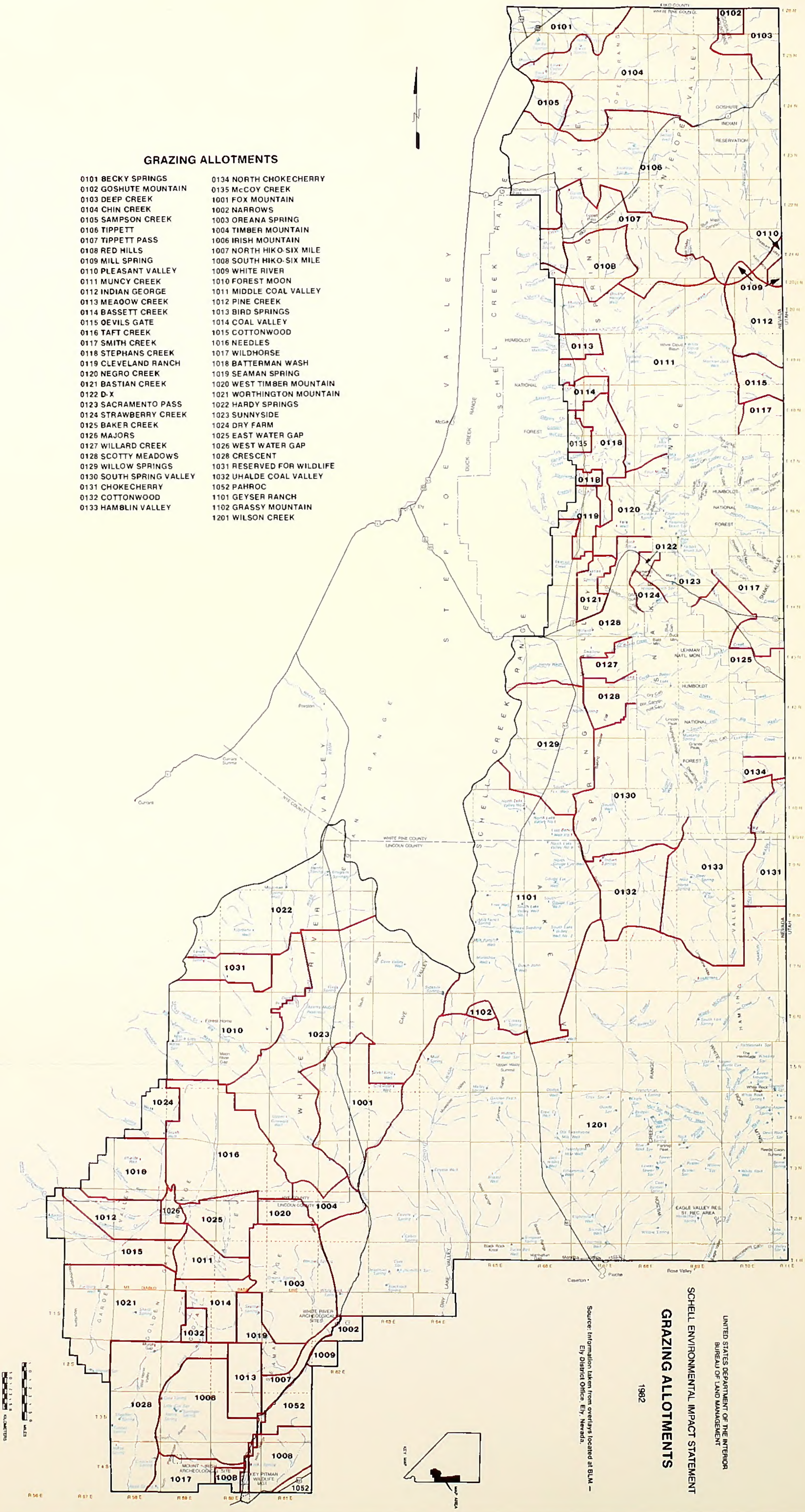
16. Water improvement sites will have bird ramps in watering troughs.

17. When required, excess wild horses will be removed from public lands and put in the custody of individuals, organizations, or other government agencies. Field destruction of wild horses or burros will require appropriate authorization.

18. Water availability will be determined by detailed hydrogeological study of the site.

19. Maintenance of livestock management structures (fences, water developments) would be accomplished by operators through cooperative agreements with the BLM.





GRAZING ALLOTMENTS

0101 BECKY SPRINGS
0102 GOSHUTE MOUNTAIN
0103 DEEP CREEK
0104 CHIN CREEK
0105 SAMPSON CREEK
0106 TIPPETT
0107 TIPPETT PASS
0108 RED HILLS
0109 MILL SPRING
0110 PLEASANT VALLEY
0111 MUNCY CREEK
0112 INDIAN GEORGE
0113 MEADOW CREEK
0114 BASSETT CREEK
0115 DEVILS GATE
0116 TAFT CREEK
0117 SMITH CREEK
0118 STEPHANS CREEK
0119 CLEVELAND RANCH
0120 NEGRO CREEK
0121 BASTIAN CREEK
0122 D-X
0123 SACRAMENTO PASS
0124 STRAWBERRY CREEK
0125 BAKER CREEK
0126 MAJORS
0127 WILLARD CREEK
0128 SCOTTY MEADOWS
0129 WILLOW SPRINGS
0130 SOUTH SPRING VALLEY
0131 CHOKECHERRY
0132 COTTONWOOD
0133 HAMBLIN VALLEY
0134 NORTH CHOKECHERRY
0135 McCOY CREEK
1001 FOX MOUNTAIN
1002 NARROWS
1003 OREANA SPRING
1004 TIMBER MOUNTAIN
1006 IRISH MOUNTAIN
1007 NORTH HIKO-SIX MILE
1008 SOUTH HIKO-SIX MILE
1009 WHITE RIVER
1010 FOREST MOON
1011 MIDDLE COAL VALLEY
1012 PINE CREEK
1013 BIRD SPRINGS
1014 COAL VALLEY
1015 COTTONWOOD
1016 NEEDLES
1017 WILDHORSE
1018 BATTERMAN WASH
1019 SEAMAN SPRING
1020 WEST TIMBER MOUNTAIN
1021 WORTHINGTON MOUNTAIN
1022 HARDY SPRINGS
1023 SUNNYSIDE
1024 DRY FARM
1025 EAST WATER GAP
1026 WEST WATER GAP
1028 CRESCENT
1031 RESERVED FOR WILDLIFE
1032 UHALDE COAL VALLEY
1052 PAHROC
1101 GEYSER RANCH
1102 GRASSY MOUNTAIN
1201 WILSON CREEK

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SCHELL ENVIRONMENTAL IMPACT STATEMENT

GRAZING ALLOTMENTS

1982

Source: Information taken from overlays located at BLM –
Ely District Office, Ely, Nevada.

CHAPTER 2

THE AFFECTED ENVIRONMENT

INTRODUCTION

The information presented in this chapter describes that part of the existing environment of the Schell RA that would be affected by the proposed action or alternatives. Descriptions presented are designed to be brief yet informative with respect to the expected magnitude, intensity, and duration of the impacts. The project area covers the portion of Nevada shown in the Area Map.

REGIONAL SETTING

The Schell RA is located in mideastern Nevada on the Utah border within the Basin and Range Physiographic Province. The topography is characterized by a series of north-south oriented mountain ranges that border broad, flat valleys. Extensive, normal block faulting that created these landforms continues to the present day as evidenced by active fault scarps and frequent minor earthquakes (URA-2, Schell). Elevations range from just under 4,000 ft near Hiko to 13,063 ft on Mt. Wheeler. Alluvial fans and benchlands that line the extremely rocky mountains form gentle slopes and washes.

The region has a semiarid continental climate characterized by a meager amount of precipitation and a high percentage of sunshine. The annual precipitation is divided between summer thunderstorms and winter snows. The average annual precipitation in the valley floors is about 8 in and generally increases with the rise in elevation to 16 in or more in the mountains (National Oceanic and Atmospheric Administration 1978). Sunshine days average 79 percent per year with temperatures ranging from -28 F to 102 F with an average of 60 F in the summer and 34 F in the winter. There are typically 90-120 frost-free days per year. Prevailing winds from the south and southwest in the summer act in conjunction with the moderate temperature to produce an annual free water evaporation rate of approximately 47 in.

Air temperature inversions are common during all months of the year with the greatest occurrence during the cold months. Occasionally smoke from the Kennecott Copper smelting operation near McGill becomes trapped by inverted air layers in Spring Valley. Another factor affecting air quality within the Schell RA is the occurrence of dust storms which are common around dry lake beds in the valley bottoms during late spring and summer.

Geologically recent volcanic rocks contain significant mineral deposits, such as the perlite deposits in Lincoln County (Tschanz and Pampeyon 1970). Among the mineral resources within the area are copper, silver, sodium, potassium, and gold.

WATER RESOURCES

SURFACE WATER

Due to its geologic location and topographic character, the Schell RA has little available surface water, although ground water reserves are thought to be substantial in certain areas. Most valleys are closed basins with no external surface drainage. Surface water from the higher elevations is lost to infiltration and evapotranspiration on the valley slopes; smaller portions are evaporated on the valley floors. The majority of the streams are intermittent, flowing only during spring snowmelt and occasional summer rainstorms.

Major drainage systems of the Schell RA were formed during the Pleistocene, when considerably more surface water was available than today. Drainage systems such as the White River were formed at that time, but today only flow for short distances below spring sources.

WATER QUANTITY

Since most of the streams of the area flow only intermittently, flow gauging is rare and discharge is not well known. Runoff from the area is estimated at approximately 200,000 ac-ft annually, concentrated in the months of March through June. Most of the surface water, both streams and springs, occurs in or very near mountainous areas. Groundwater recharge is estimated at over 219,000 ac-ft annually, while estimated groundwater storage is considered to approximate 14,000,000 ac-ft (USDI, BLM, Schell URA 1980), most of which has not been developed.

WATER QUALITY

A water quality sampling program was conducted in the Schell RA by the BLM in 1979. A total of 67 stations, including 51 springs and 8 streams, were sampled 3 times. In addition, a limited amount of water quality data is available for some streams from a 1981 stream habitat inventory conducted by BLM. Water quality data collected from springs showed levels of total dissolved solids (TDS) in excess of 500 mg/l (suggested maximum for human consumption and irrigation) in 94 percent of the springs sampled. These high levels can be attributed primarily to the movement of water through mineral rich alluvial slopes. Streams varied in the 1979 survey but exceeded 500 mg/l TDS in 62 percent of the 16 stations sampled. Average turbidity levels exceeded 10 NTUs in 27 percent of the 67 springs and streams sampled and was marginal (near 10 NTU) in another 18 percent of the surface waters.

Fecal coliform bacteria exceeded Nevada water quality regulations in only 4 percent of the surface waters sampled. Overall water quality within the area was fair to good with some exceptions.

SOILS

Soils data for the Schell RA are found in two "Third Order" (Hamblin Valley, Meadow Valley), one "Fourth Order" (White River Valley), and one "Exploratory" (White Pine County) soil surveys, which cover approximately 61 percent of the resource area. Range site interpretations were developed only for the third order surveys which amount to 12 percent of the area. The information in the other surveys is useful for general planning, but not for detailed planning for specific purposes such as range site interpretations. For a summary of chemical and physical properties of the soils found in the resource area, refer to the Schell Resource Area URA-2 soils section (USDI, BLM 1980) and the Meadow Valley Soil Survey (USDA, SCS 1976).

Soils within the Schell RA vary considerably in texture and type. The area is generally dominated by loamy soils, with salinity increasing from the alluvial areas to the valley floors. There is no information available on erosion susceptibility in the Schell RA. In order to approximate the needed information, water conservation and development data were used to identify erosion condition classes. Erosion condition classes are identified by their respective Soil Surface Factors (SSF) which are statistical ratings of ground cover and evidence of erosion. Soil Surface Factors are as follows: 0-20 stable, 21-40 slight, 41-60 moderate, 61-80 critical, and 81-100 severe. About 97 percent of the Schell RA has moderate erosion or less and over half has slight erosion or less. The Cattle Forage Condition Map and Sheep Forage Condition Map show the location of areas in critical erosion condition.

VEGETATION

VEGETATION TYPES

The Schell RA is diverse in its topography, soils, precipitation, and elevation. It has fourteen broad vegetation types based on the dominant species (Table 2-1). Plant composition, density, productivity, and potential vary greatly within these types, largely due to differences in climate and soils. Aspect, slope, and elevation also contribute to variation.

These communities are depicted on the Vegetation Type Map. Vegetation types were identified and delineated following a 1978 and 1979 range inventory and include about 112,000 ac of range seedings. The sagebrush and pinon-juniper types are the most common, each covering about one-third of the Schell RA. Other common vegetation types are saltbush, desert shrub, and greasewood.

Riparian vegetation is important in the Schell RA because it provides forage and cover for livestock, wildlife, and wild horses. Although the riparian communities are highly productive, they cover too small an area to be delineated on the Vegetation Type Map. Riparian vegetation occurs along most of the streams in the Schell RA (Aquatic Habitat Map). Many of the streams no longer flow in their natural channels but have been diverted into ditches to supply water to irrigated fields. Soil and other factors along these ditches are not condusive to extensive riparian areas like those that occur along the natural streams. Therefore, riparian habitat is no longer as common as it once was in the Schell RA.

Riparian vegetation is dominated by plants which include cottonwood, willow, birch, aspen, wild rose, chokecherry, and a number of grasses and sedges. Table 2-2 lists streams that were surveyed in 1976, the allotment in which they are found, the length of the riparian area, and whether or not livestock damage was evident. This list does not include all stream areas in the Schell RA since it was conducted on potentially fishable, and therefore larger and more permanent, streams. More miles of riparian habitat occur along intermittent streams, and perhaps near streams not surveyed in 1976. Since the more permanent and larger streams probably have the longest and most important riparian systems, the stream survey data are the best available to use to quantify the riparian habitat.

A 100-ft width on each bank was used to estimate the number of acres of riparian vegetation that could potentially occur along these streams. This distance is generally greater than the extent of the riparian vegetation, but was used because fencing to alleviate livestock damage has been proposed at this distance from the stream. This calculation yields approximately 24 ac of riparian habitat along each mile of stream and a total of 2,173 ac of riparian vegetation in the Schell RA (Table 2-2).

Of the 35 streams studied in 1976, 22 streams had grazing damage to the riparian vegetation, 6 streams had no apparent damage, and the remaining 7 streams were not surveyed because they were dry. Therefore, approximately 75 percent of the riparian areas surveyed had been affected by grazing. Riparian vegetation around Big Spring, Cherry, Negro, and Snowbank creeks has been the most severely damaged.

The wetland vegetation of the Schell RA is very productive, heavily utilized by livestock, and mostly in poor condition. Wetland vegetation is characterized by meadow areas (included in the Meadow vegetation type) dominated by inland saltgrass and alkali dropseed, and surrounded by greasewood or rabbitbrush. There is an estimated 11,700 ac of wetland vegetation in the resource area (Aquatic Habitat Map). The larger wetland areas are located on the west side of Spring Valley, in southern Spring Valley, and along Big Spring Creek. Smaller areas are found around most springs.

PHENOLOGY

The Ely District BLM Office participated in a 4-year (1976-1979) statewide phenology study conducted by Natural Resource Consultants. The phenology study sites were located adjacent to the Schell RA in the Egan Resource Area. Data collected from the Ely and other BLM Nevada districts were used to determine critical growth periods of management species.

Variations in phenology occur from year to year and are probably due to variations in the amount and timing of precipitation and seasonal temperature. Due to this variation in phenology, a 4-year average of the phenological stages of growth was determined (Figure 2-1).

Table 2-1. Important characteristics of the 14 vegetation types found on the Schell Resource Area.

	Vegetation Types	Acres	% Total Area	Elevation ft. above sea level	Average Precip. in inches	Soil Characteristics	Landform	Associated Species[a]
1	Saltbush	268,022	6	4,300–6,000	5–8"	Alkaline	Valley bottoms	Shadscale, Nuttal saltbush, fourwing saltbush, bottlebrush squirreltail, Indian ricegrass
2	Desert Shrub	207,619	5	4,000–6,000	5–8"	Mixed	Lower benches	Blackbrush, spiny hopsage, spiny horsebrush, Indian ricegrass, bottlebrush squirreltail
3	Greasewood	174,836	4	4,300–6,000	5–8"	Saline-clay	Valley bottoms	Black greasewood, Bailey's greasewood, inland saltgrass, alkali dropseed, bottlebrush squirreltail
4	Winterfat	134,409	3	4,300–6,000	5–8"	Silty loam	Valley bottoms, lower benches	Winterfat, budsage, Indian ricegrass, bottlebrush squirreltail
5	Half Shrub	5,852	-	4,300–6,000	5–8"	Mixed	Valley bottoms	Snakeweed, gray molly (Kochia), goldenweed, shadscale, bottlebrush squirreltail
6	Sagebrush	1,718,449	41	5,000–7,000	7–12"	Loamy	Valleys or mountains	Big sagebrush, low sagebrush, black sagebrush, rabbitbrush, Indian ricegrass, bottlebrush squirreltail, needlegrass, bluegrass
7	Pinyon-Juniper	1,547,938	37	6,000–8,000	10–20"	Shallow-rocky	Benches-upper ridges	Pinyon, juniper, big and black sagebrush, bluegrass, bottlebrush squirreltail
8	Mountain Shrub	77,059	2	7,500–10,000	16–20"	Granite and limestone	Mountains	Mountain mahogany, bitterbrush, snowberry, sagebrush, Idaho fescue, thurber needlegrass
9	Broadleaf	523	-	7,000–10,000	12–20"	Shallow, gravelly to deep loam	Mountains and canyons	Aspen, snowberry, big sagebrush, thickspike wheatgrass, common yarrow
10	Conifer	16,587	-	9,000–10,500	16–25"	Rocky, deep loam	Mountains	White fir, Douglas fir, bristlecone pine, mountain mahogany, snowberry
11	Grass	76,738	2	4,300–7,500	7–18"	Mixed	Valleys and benches	Crested wheatgrass, basin wildrye, big sagebrush, galleta
12	Meadow	2,600	-	5,000–7,000	5–12"	non-salty loamy	Valley bottom	Sedge, rush, basin wildrye, alkali dropseed, black greasewood, willow, wild rose
13	Annuals	2,897	-	4,300–8,000	6–16"	Mixed	Valleys to mountains	Cheatgrass, halogeton, Russian thistle, pepperweed, bottlebrush squirreltail
14	Barren	5,357	-	4,300–10,500	5–25"	Alkaline flats, rocky outcrops	Valley bottoms and mountains	
	Untyped	466	-					
	Total	4,239,352	100					

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[a] Scientific names can be found in Appendix A.

Source: U.S. Department of the Interior, Bureau of Land Management, Ely District, Schell Resource Area Unit Resource Analysis, 1981.

Table 2-2. Stream riparian areas in the Schell Resource Area.

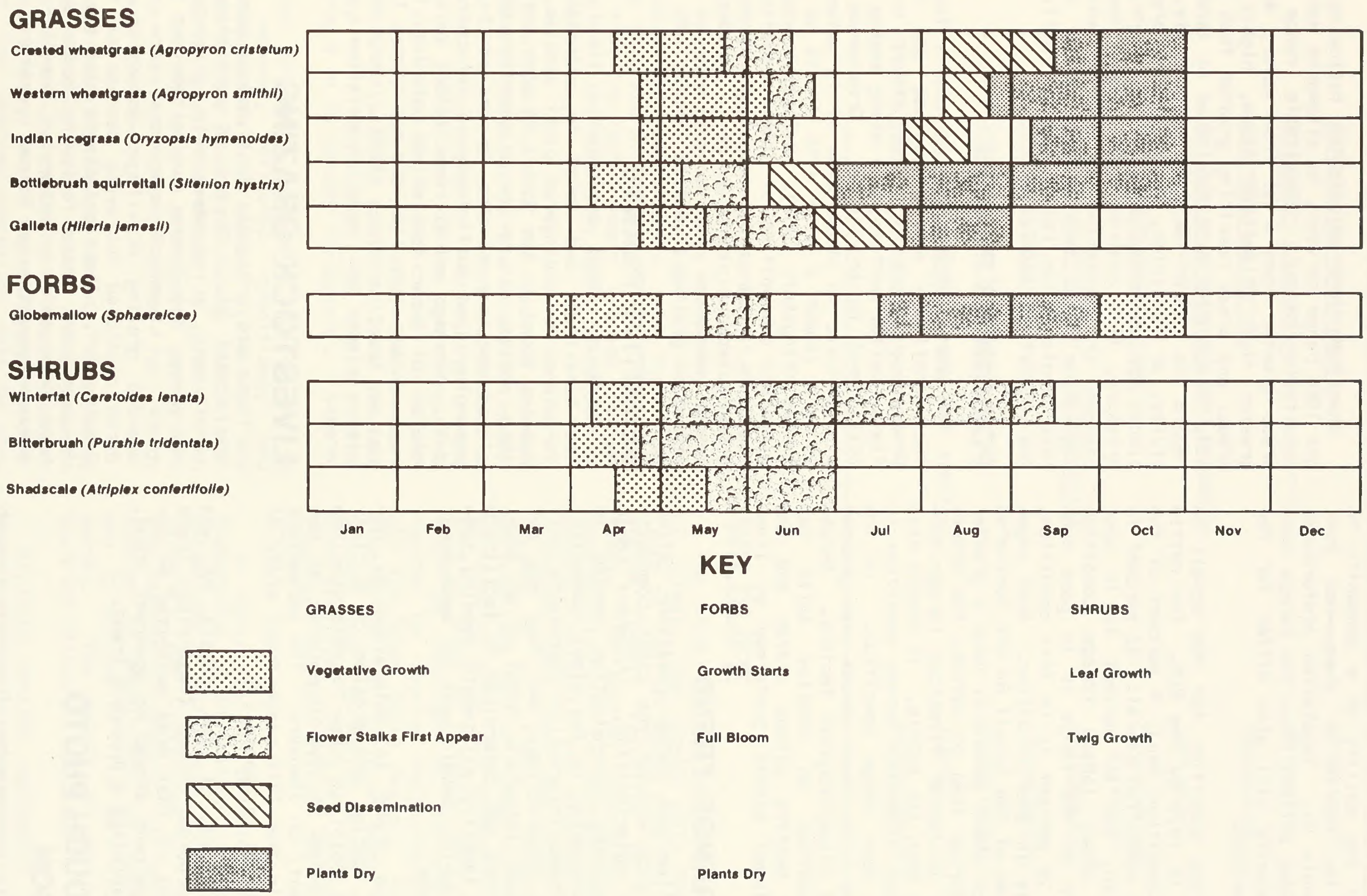
	Allotment	Miles on BLM Land	Livestock Damage	Acres of Riparian
Baker	Baker Creek	2.0 dry	[a]	48
Bassett	Bassett Creek	1.0	yes	24
Bastian	Majors	1.9	yes	46
Big Spring	Hamblin Valley	4.0	yes	96
Big Wash	Chokecherry Baker Creek	3.0	yes	72
Cherry Creek	Batterman Wash	6.0	yes	144
Cleve	Cleveland Ranch	1.8	yes	43
Cottonwood	Cottonwood	10.5 dry	[a]	252
Eight-Mile	Muncy Creek	3.5	yes	84
Frenchman	Red Hills	1.0	[a]	24
Geyser	Geyser Ranch	2.0	yes	48
Hampton	Smith Creek	0.5	no	12
Kalamazoo	Muncy Creek	2.3	yes	55
Lehman	Baker Creek	0.13	no	3
Lexington	Baker Creek	2.2 dry	[a]	53
McCoy	McCoy Creek	1.0	no	24
Meadow	Meadow Creek	0.8	yes	19
Meadow Valley	Wilson Creek	5.0	yes	120
Negro	Negro Creek	5.0	yes	120
North	Geyser Ranch	3.0	no	72
Odger's	McCoy Creek	0.5	no	12
Piermont	Muncy Creek	2.0	yes	48
Pine (Ridge)	Willard Creek	2.0	yes	48
Serviceberry	Wilson Creek	6.0 dry	[a]	144
Seigel	Tippett Pass	0.8	no	19
Silver	Smith Creek	1.8	yes	43
Smith	Smith Creek	1.3 dry	[a]	31
Snake	Baker Creek	3.5	yes	84
Snowbank	Red Hills	2.5	yes	60
Strawberry	Baker Creek	0.2	yes	5
Swallow	South Spring Valley	2.0	yes	48
Vipont	Cleveland Ranch	0.8	yes	19
Weaver	Strawberry	5.2 dry	[a]	125
Willard	Sacramento Pass Willard Creek	1.9	yes	46
Wilson	Wilson Creek	3.4	yes	82
Total		90.53 mi		2,173 ac

[a] No data available.

Source: 1976 and 1981 Schell Resource Area Stream Survey.

FIGURE 2-1

AVERAGE PHENOLOGY OF MANAGEMENT SPECIES ON THE ELY DISTRICT



Source: Data taken from Nevada Rangeland Phenology, Bureau of Land Management 1976 to 1979.
Published by Natural Resources Consultants. Las Vegas, Ely, Battle Mountain and Elko Study Sites.

LIVESTOCK FORAGE CONDITION

Since the Schell RA lacks basic soil mapping and range site delineation, range condition (the condition of a range site in relation to its potential) has not been determined. In lieu of range condition, livestock forage condition—an interpretation of the ability of a community to provide forage for cattle or sheep--has been determined (Appendix B). Vegetation preferences of cattle and sheep differ, thus the forage condition of a community will also differ for the two kinds of livestock.

Livestock forage condition for the Schell RA was inventoried in 1979 by the BLM. For cattle (Cattle Forage Condition Map), 9 percent of the range is in good condition overall, 22 percent is in fair condition, and 69 percent is in poor condition; for sheep (Sheep Forage Condition Map), 41 percent of the range is in good condition overall, 28 percent is in fair condition, and 31 percent is in poor condition. Most vegetation communities of the Schell RA are dominated by shrubs. Since sheep generally have a greater preferance for shrubs than do cattle, the Schell RA is generally in better livestock forage condition for sheep than for cattle. It should also be noted that poor livestock forage condition is not necessarily poor range condition. In the Great Basin, many sites favor shrubs over grasses due to soil and climatological factors. Shrub-dominated communities on shallow soils may actually be in healthy climax states and may never have included plants preferred by livestock.

APPARENT RANGE TREND

The present livestock forage condition rating alone does not show whether the plant community is improving or deteriorating. Apparent range trend is a separate determination needed to assess what is happening to the plant community. Apparant range trend information represents only a single year's observations and thus may not reflect the actual long-term trend of an area. Apparent range trend was determined to facilitate analysis and to identify allotments needing special attention during development of management or monitoring plans.

Apparent range trend is determined by observing the key species and erosion of a plant community at one point in time to determine the direction the system is changing--rated as upward, not apparent, or downward. The parameters that were used in the 1979 range trend study of 2,500 sites are shown in Appendix C.

Sixty-nine percent of the Schell RA was classified for apparent trend (Vegetation Trend Map): 33 percent of that area exhibited an upward trend, 44 percent showed no apparent trend, and 23 percent exhibited a downward trend.

TREND THROUGH PHOTO COMPARISON

Areas initially photographed from 1910 through 1923 were rephotographed in 1960 to note trends in vegetation. Of striking contrast in the recent photos is the increase of junipers on the mid to lower mountain slopes and in some places even on the loamy plains below these slopes. Formerly the loamy, moderately rocky soils on the lower mountain slopes, especially in ravines, supported a mixture of grasses and shrubs. Today big sagebrush and juniper have increased at the expense of grass. Fire control, grazing, and drought conditions of the 1930s contributed to the compositional changes in vegetation.

When AUMs were adjudicated following the 1946 and 1964 range surveys, no allowance was made for unsuitable range. Unsuitable range includes areas greater than 4 mi from water, areas with greater than 50 percent slope, highly erodable areas, and areas requiring greater than 50 ac per AUM. Since AUMs were considered on lands without regard to their actual availability, productivity, or condition, extra grazing pressure was placed on preferred areas. This extra grazing pressure, fire control, and drought have led to changes in vegetation composition which favor vegetation types less productive for livestock. This imbalance has led to improper utilization of the vegetation resource.

POISONOUS PLANTS

The most common poisonous plants found within the Schell RA are greasewood and halogeton. Greasewood occurs in dense stands in alkaline flats, valley bottoms, and along washes where the soils tend to be saline. Greasewood is especially toxic to sheep when it is eaten in large amounts (about 2 lbs) with little or no other intake (Kingsbury 1964). Halogeton occupies most disturbed communities at lower elevations and is toxic to sheep and, occasionally, to cattle. Other poisonous plants exist in the Schell RA in lesser abundance and do not have as great an impact on grazing livestock (Table 2-3).

SENSITIVE PLANTS

Harrison (1980) conducted a field survey of the Schell RA and found no officially listed threatened or endangered plant species. Several species found in the Schell RA were included in a 1980 notice of review (Lamberton 1980) which placed proposed species in one of 3 categories depending upon sufficiency of information (Table 2-4). Mozingo and Williams (1980) designated the status of some species by placing them on a recommended watch list and additional information can be found in Pinzl (1978). Most of the sensitive plants are found in relatively restricted areas.

LIVESTOCK GRAZING

There are presently 58 livestock permittees in the Schell RA. Of the 58 permittees, 38 run cattle only, 4 run sheep only, 9 run both cattle and sheep, and 7 have run neither for the last 3 years. Livestock operators were originally awarded grazing privileges according to procedures developed following passage of the Taylor Grazing Act. These privileges have been adjusted in subsequent years following range surveys and have been sold or otherwise transferred freely between operators and to new operators.

As discussed in the Vegetation section of this chapter, AUMs were adjudicated with no allowance for unsuitable range. Also, fire control has led to vegetation composition changes which form vegetation types less productive for livestock.

Table 2-3. Poisonous plants of the Schell Resource Area.

Scientific Name	Common Name
Sarcobatus vermiculatis	Greasewood
Halogeton glomeratus	Halogeton
Tetradymia glabrata	Horsebrush
Delphinium andersonii (and probably other species)	Larkspur
Astragalus lentiginosus	Speckled pod milkvetch
Astragalus miser var. oblongifolius	Poisonvetch
Prunus virginiana	Chokecherry
Zigadenus paniculatus	Death camus
Lupinus caudatus (and other species)	Lupine
Circuta angustifolia	Water hemlock

This has led to improper utilization of the vegetation resource. In response to this problem, livestock operators have taken voluntary reductions in the number of AUMs used and have initiated rangeland improvements at their own expense or have shared the expense with BLM. The result is that the last 3 years' average licensed use (Table 1-1) has been only about 50 percent of grazing preference.

All cattle operations in the resource area are cow-calf operations, mostly characterized by extensive unfenced areas with heavy dependence on public lands. Dependence on public lands ranges from 3 to 72 percent for cattle operations with less than 800 animal units and from 51 to 94 percent for cattle operations with 800 or more animal units. All sheep operations are ewe-lamb operations, with dependence on public lands ranging from 8 to 50 percent throughout.

Livestock movements generally correspond to changing seasons, climatic conditions, and current management practices. Livestock are restricted to the lowlands during the winter months. Grazing in the summer is generally in the high country. Most allotments are grazed during the critical growth period for forage plants (see Figure 2-1).

Five allotments (Muncy Creek, Strawberry Creek, Smith Creek, Geyser Ranch, and Sacramento Pass) are currently run under Allotment Management Plans (AMPs). An AMP determines the manner and extent that grazing operations will be conducted. They are prepared in consultation with the livestock operators or permittees and utilize the benefits of grazing systems and range improvements. Willow Springs is run under a grazing system but without an approved AMP.

WILDLIFE

The Schell RA provides habitat for 388 species of animals (see Schell Unit Resource analysis). Types of habitat range from salt desert shrub to alpine timber, resulting in a highly diverse fauna. Of special importance to the wildlife species diversity of eastern Nevada are riparian zones. Wildlife use riparian zones disproportionately more than any other type of habitat (Thomas et al. 1980). Riparian areas create well-defined habitat zones within the much drier surrounding areas and generally are more productive in terms of biomass, both plant and animal, than the remainder of the area. They provide habitat for species that otherwise wouldn't inhabit the Great Basin region. Riparian zones are also attractive for other uses, such as livestock grazing and recreation which directly conflict with wildlife. There are approximately 90 mi of riparian habitat within the Schell RA (Table 2-2).

In 1979, the Ely District completed wildlife inventories of the entire resource area under the guidelines of BLM Manual 6602, Integrated Habitat Inventory and Classification System. Seventy-four species of mammals, 247 species of birds, 11 species of amphibians, 28 species of reptiles, and 25 species of fish were recorded during the survey. The report is available at the Ely District Office of the BLM.

Wildlife habitat management plans (HMP) have been approved for 4 areas within the Schell RA, Horsethief-Dry Valley, Deep Creek, West Desert, and Shoshone Ponds. A HMP is an officially approved plan for a specific geographical area designed to maintain or improve the habitat of specific wildlife species having high priority

Table 2-4. Sensitive plant species of the Schell Resource Area and their status according to Lamberton (1980).

Scientific Name	Common Name	Status[a]
Ascelpias eastwoodiana	Eastwood milkweed	2
Astragalus calycosus var. *monophyllidius*	One-leaf Torrey milkvetch	1
Astragalus lentiginosus var. *latus*	Broad milkvetch	2
Astragalus oophorus var. *lonchocalyx*	Spearcalyx milkvetch	2
Coryphantha vivipara var. *rosea*	Clokey pincushion cactus	2
Cryptantha interrupta	Interrupted cryptantha	3C
Cymopterus basalticus	Basalt springparsley	2
Erigeron ovinus	Sheep fleabane	2
Eriogonum darrovii	Darrow buckwheat	3C
Frasera gypsicola	Sunnyside green gentian	1
Gilia nyensis		2
Haplopappus watsonii	Watson goldenweed	3C
Lepidium nanum	Dwarf pepperweed	2
Machaeranthera leucanthemifolia	White-leaf machaeranthera	3C
Mirabilis pudica	Bashful four-o-clock	3C
Phacelia parishii	Parish phacelia	2
Sclerocactus pubispinus	Great Basin fishhook cactus	1
Silene scaposa var. *lobata*	Lobed silene	3C
Thelypodium sagittatum var. *ovalifolium*	One-leaf thelypody	2

[a] 1 = sufficient information to list; 2 = insufficient information to list; 3C = no longer considered for listing.

for management. None of these plans, however, has been fully implemented. Full implementation is scheduled for 1990, assuming funds are available.

BIG GAME

Mule deer, pronghorn antelope, elk, and bighorn sheep are the big game species occupying the resource area which are directly affected by livestock grazing. Of the four species, mule deer are the most abundant and widespread, followed by pronghorn antelope. Only small populations of elk and bighorn sheep use public lands and then only during certain seasons of the year. It is the desire of BLM and the Nevada Department of Wildlife (NDOW) to increase populations of these game animals.

MULE DEER

Mule deer populations in the northern portion of the area have fluctuated greatly in the past 30 years, peaking in the late 1950s and early 1960s and again in the early 1970s. The most recent trend information indicates the population is static to moving slightly upward. The deer population in the southwestern portion of the area peaked prior to 1957 with a downward trend until 1973 when a minor increase was reported. The population within the central and southeastern part of the area peaked in the early 1960s with a downward trend since that time (Schell URA-3, Wildlife). Indications are that maximum deer levels were reached in the mid-1950s in the southcentral portion of the area and have remained relatively static to date.

Table 2-5. Mule deer habitat condition in acres in the Schell Resource Area.

Season	Excellent	Good	Fair	Poor	Unknown	Total
Summer/Fall	7,100	92,300	85,500	94,600	0	279,500
Winter	0	109,100	330,000	476,700	5,800	921,600
Spring	0	6,800	8,800	12,200	0	27,800
Yearlong	25,000	35,700	359,300	205,100	29,100	654,200
Total Acres	32,100	243,900	783,600	788,600[a]	34,900	1,883,100
Percent Total	2	13	41	42	2	100

[a] Most poor areas due to lack of water.

Source: USDI, BLM URA-3, Wildlife (1980).

Table 2-6. Habitat condition of crucial mule deer range by allotment in the Schell Resource Area.

Allotment	Season of Use	Condition
Muncy Creek	Spring	Good
McCoy Creek	Spring	Fair
Taft Creek	Spring	Poor-Fair
Stephens Creek	Spring	Poor
Cleveland Ranch	Spring	Poor
Majors	Spring	Poor
Geyser Ranch	Summer	Poor - North Good - South
Wilson Creek		
White Rock Area	Summer	Good
Mt. Wilson Area	Summer	Fair
Bristol Area	Winter	Fair
Dutch John Area	Winter	Poor
Mule Shoe Area	Winter	Poor - North Fair - South

The 1980 estimate of deer numbers in the Schell RA is 4,535. Reasonable numbers, the number NDOW believes could live in the area, are based on average numbers over the last 20 years or so. This is estimated at 10,521 animals (Schell URA-3, Wildlife).

In 1976, NDOW initiated restricted buck only hunting seasons in an attempt to increase deer populations in eastern Nevada. The deer herds on the Schell Creek Range have responded well and are expected to reach reasonable numbers. The deer herds on the Antelope, Kern, White Rock, Wilson Creek, and Fortification Ranges, however, have not responded and, in fact, may be below a threshold where a small mortality factor, such as predation, could severely limit population growth. The NDOW believes that the lack of response is related to habitat condition of the summer range. Winter range is extensive and does not appear to be limiting (Mike Wickersham, Roy Leach, NDOW, Personal communication, 1982). The amount of summer range, however, is quite small, and has historically received and presently receives heavy use by livestock, wildlife, and wild horses. It is suspected that this heavy competition for forage is a primary factor limiting the growth of deer populations.

Habitat condition for mule deer on the Schell RA was determined jointly by BLM (Robinson and Logan 1979) and NDOW. Conditions were evaluated by the quality, quantity, and juxtaposition of available food, water, and cover. In addition, the BLM and NDOW jointly determined forage availability for existing numbers of deer. It was found that forage was lacking on parts of all mountain ranges except the Bristol, North Pahroc, Hiko, Pahranagat, and Worthington mountains.

Table 2-5 shows the habitat condition by season of use for the entire Schell RA. Table 2-6 shows the condition of crucial range by allotment.

As shown on Table 2-5, about 922,000 ac (49 percent) of mule deer habitat on public land within the Schell RA is winter range. Range designated as crucial represents about 2 percent (21,300 ac) of this winter habitat. In contrast, summer range makes up about 280,000 ac (15 percent) of the deer habitat in the Schell RA with about 99,000 ac (35 percent) designated as crucial. Range used exclusively in spring constitutes about 1.5 percent of the deer habitat with almost 50 percent (13,000 ac) designated as crucial.

Yearlong habitat occurs on Becky Peak, Antelope Range, Kern Mountains, Sacramento Pass, Worthington Mountains, Golden Gate Range, Mount Irish, South Egan Range, Fairview Range, Bristol Range, Fortification Range, and Meadow Valley Wash. These areas constitute 654,200 ac (35 percent) of the total mule deer habitat on public land in the Schell RA.

Important forage plants on crucial winter range include mountain mahogany, antelope bitterbrush, and cliffrose. On crucial summer range, the deer key on habitat types such as stream riparian, aspen groves, mountain mahogany stands, white fir stands, and mountain shrub rather than to specific plants. On crucial spring ranges, deer take advantage of grass and forb spring green-up. They may occupy these areas for only 2-3 weeks but their densities often exceed 250 deer per mi^2 (Mike Wickersham, NDOW, Personal communication, 1982).

PRONGHORN ANTELOPE

Pronghorn antelope numbers within Spring, Antelope, and Snake Valleys are thought to be at their highest level in 10 years. The populations in Lake Valley, Hamblin Valley, and near Mt. Wilson show an upward trend (Tsukamoto 1980).

Pronghorn use these areas yearlong. A few winter and spring concentration areas occur in the northern part of the Schell RA (Antelope Valley).

Habitat condition of these ranges was determined jointly by BLM (Robinson and Logan 1979) and the NDOW. The primary factors considered were the overall quality and quantity of available food, water, and cover. Table 2-7 shows the condition of the habitat by seasonal use areas.

Forage is generally sufficient to support existing and also reasonable numbers of pronghorn. Winter ranges in Antelope and Central Spring Valley are the only areas which lack adequate forage.

There are 5 winter ranges in the northern portion of the Schell RA which are considered crucial during long, severe winters. Animals will concentrate on these areas during long periods of extreme snow depth. Other crucial habitat areas are kidding grounds located on the east slope of the northern Schell Creek Range and Antelope Range and in Snake Valley (see Wildlife Map). Peak activity on kidding grounds occurs from May 25 to June 7. The condition of kidding grounds within allotments is shown in Table 2-8.

The potential exists for reestablishing pronghorn populations in Dry Lake, White River, Garden, Coal, and Cave Valleys since these valleys were historically inhabited by pronghorn. Poor distribution of water is the primary factor presently limiting their occurrence in these areas.

ELK

Elk occupy public land in the Schell RA primarily during the winter. The Schell Creek Range is used from December to April by about 10 elk, and the south Egan Range from mid-October to March by about 20 elk. The habitat condition on all 25,200 ac of winter range as determined by BLM (Robinson and Logan 1979) and the NDOW is considered poor. Reasonable numbers of elk in these 2 areas is 28 and 25, respectively. The current trend in the population is believed to be slightly upward (Tsukamoto 1980).

BIGHORN SHEEP

The bighorn sheep is considered a sensitive species by both BLM and NDOW. The NDOW is planning to reestablish sheep in most of its former range. Both the desert and Rocky Mountain subspecies of bighorn sheep occupy the Schell RA. The distribution of each subspecies is shown in Hall (1946). Bighorn were never numerous in

Table 2-7. Pronghorn antelope habitat condition in acres in the Schell Resource Area.

Season	Excellent	Good	Fair	Poor	Total
Yearlong	0	584,700	272,200	340,800	1,197,700
Winter	0	53,100	0	57,900	111,000
Spring	0	6,500	13,700	1,400	21,600
Total Acres	0	644,300	285,900	400,100	1,330,300
Percent Total	0	48.4	21.5	30.0	100.0

Source: USDI, BLM URA-3, Wildlife Section (1980).

Table 2-8. Condition of pronghorn kidding areas in the Schell Resource Area.

Allotment	Condition
Chin Creek	Poor
Tippett Pass/Red Hills	Poor
Smith Creek	Poor - North Fair - South

Nevada, but historic populations were higher than at present (McQuivey 1978). Bighorns were infrequently observed in the Snake Range in the mid-1960s but disappeared until 1975 when they were reintroduced on Mt. Moriah. Another population was reestablished on Wheeler Peak in 1979. The Mt. Moriah population uses about 9,400 ac of public land as winter range. Sitings have been made recently on the Schell Creek Range. The existing number of bighorn using this area is presently about 40 but reasonable numbers are estimated at 75 and the current population trend is up. A primary limiting factor for bighorn sheep is disease transmitted to them by domestic sheep, where they occupy the same range.

UPLAND GAME

Sage Grouse

The major sage grouse habitat occurs in Spring, Antelope, Snake, and Hamblin Valleys. Strutting grounds have been identified in Spring and Antelope Valleys. Other important populations occur in Meadow Valley Wash and White Rock Peak, with unverified reports of strutting grounds. Smaller isolated populations occur on Parsnip Peak, Mt. Wilson, Table Mountain, Mt. Grafton, Grassy Mountain, and south Egan Range.

There are approximately 763,000 ac of sage grouse habitat within the Schell RA, all of which is considered yearlong. Strutting grounds, habitat within a 2-mi radius, and meadow riparian areas are considered crucial (see Wildlife Map). Most strutting activity in northeastern Nevada occurs from about March 15 to April 25 (Schell URA-3, Wildlife). Upland meadows are also crucial to the survival of sage grouse in Nevada (Savage 1969, Oakleaf 1971). As forbs dry up on upland sites, the grouse begin to move onto meadows. The timing of this movement varies annually depending on how weather affects the dessication of forbs. Table 2-9 shows the condition of breeding complexes (strutting ground plus 2-mile radius) and selected meadows by allotment.

The 1980 NDOW summer production surveys statewide for sage grouse showed a downward trend compared with 1978 and 1979. It is suspected that unseasonably cold, wet weather during late May and early June was a major contributing factor (Molini et al. 1980). There are indications from hunter success that sage grouse populations in Lincoln County are extremely low in numbers.

Table 2-9. Habitat condition of sage grouse breeding complexes and selected meadows[a] in the Schell Resource Area.

Allotment	Habitat Type	Condition
Becky Spring	Breeding Complex	Fair
Chin Creek	" "	Poor
Sampson Creek	" "	Good
Tippett	" "	Good
Tippett Pass	" "	Poor to Fair
Red Hills	" "	Good
Meadow Creek	" "	Fair to Good
Bassett Creek	" "	" " "
McCoy Creek	" "	" " "
Stephens Creek	" "	Poor to Fair
Cleveland Ranch	" "	Poor to Good
Bastian Creek	" "	Good
Majors	" "	"
Wilson Creek		
White Rock Area	" "	Good - South Poor - North
Rosencrantz	" "	Excellent
Meadow Valley	" "	Good - West Poor to Fair - East
Oreana Springs	Meadow	Poor to Good[b]
Irish Mountain	"	Good
Seaman Springs	Meadow	Poor
Worthington Mt.	"	"
Hardy Springs	"	Fair
Grassy Mt.	"	"
Wilson Creek	"	Fair to Excellent

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[a] Meadows were not included on wildlife map because of their small size. A map of meadows can be seen at the Ely District Office.

[b] Some allotments have several meadows and a range of conditions is given.

Blue Grouse

There are limited populations of blue grouse inhabiting public lands within the Schell RA. On a statewide basis, blue grouse populations have increased in recent years. Populations within the area appear to be increasing, although data are insufficient to substantiate this trend (Molini et al. 1980).

There are approximately 133,000 ac of blue grouse yearlong range occurring on public lands in the Schell RA. The major portion is located on the Schell Creek and Snake Ranges. Other smaller areas of habitat occur on the Antelope Range, Kern Mountains, Mt. Grafton, Grassy Mountain, Table Mountain, Mt. Wilson, and White Rock Mountain. The general habitat use pattern is canyon bottom-riparian vegetation in summer and mountain slope-fir/mahogany stands in winter.

Crucial areas include all hooting territories, nest sites, riparian zones, and winter habitat (white fir/mahogany patches). None of these areas have been specifically identified within the Schell RA.

WATERFOWL

The Wayne E. Kirch and Key Pittman Wildlife Management areas (WMA) and the Spring Valley wetlands provide most of the waterfowl habitat found in the Schell RA. The Wayne E. Kirch and Key Pittman WMAs are owned and managed by the NDOW while the BLM administered lands in the Spring Valley area are not currently under a management program.

Wetlands, as with riparian zones, provide important "islands" of habitat within the arid Great Basin environment, adding significantly to species diversity. Common nesting species include mallards, gadwalls, pintails, yellow-headed blackbirds, and red-winged blackbirds. Presently, overgrazing by livestock is reducing the quality of wildlife habitat in the Spring Valley wetlands. For example, the value of the hardstem bulrush for wildlife nesting cover is significantly reduced because it is being grazed down to a few inches in height instead of being allowed to grow to its natural height of about 8 feet.

There are several other forms of habitat important to waterfowl scattered throughout the Schell RA, consisting primarily of small meadows and livestock reservoirs which serve as feeding areas for shorebirds and nesting areas for waterfowl.

OTHER WILDLIFE

Nongame birds and mammals occur in every vegetation type within the Schell RA. Within these vegetation types, many animals depend upon unique habitat features such as springs, aspen groves, rock outcrops, riparian vegetation, wet and upland meadows, or other features which increase the habitat diversity within the normal monotypic shrub communities.

Common wildlife found within the lower elevation shrub and grassland communities (sagebrush, rabbitbrush, wheatgrass) include desert cottontail, blacktailed jackrabbit, least chipmunk, deer mouse, coyote, bobcat, badger, harrier, prairie falcon, American kestrel, mourning dove, horned lark, sage sparrow, and Brewer's sparrow. Typical species of the mountain shrub communities (bitterbrush and mountain mahogany) include Nuttall's cottontail, least chipmunk, deer mouse, coyote, bobcat, red-tailed hawk, common flicker, bushtit, Townsend's solitaire, green-tailed towhee, and chipping sparrow. Species of the pinyon-juniper type include Nuttall's cottontail, cliff chipmunk, Great Basin pocket mouse, bushy-tailed woodrat, coyote, bobcat, hairy woodpecker, Cooper's hawk, sharp-shinned hawk, Say's phoebe, pinyon jay, mountain bluebird, and rufous-sided towhee. Species which may be found in quaking aspen and Douglas fir include Uinta chipmunk, deer mouse, blue grouse, willow flycatcher, Clark's nutcracker, mountain chickadee, western tanager, and gray-headed junco.

AQUATICS

Habitat for game fisheries within the Schell RA consists primarily of small mountain streams typically 4 to 9 ft wide and usually not over 1 ft average depth. Most streams originate on US Forest Service lands, then enter public lands before going dry. Thirty-eight fishable, or potentially fishable, streams were surveyed in 1976. Thirty of these streams flowed on public land for a total length of about 55 mi. Twenty-six of the streams (46 mi) contained fish on public land (Table 2-10). The stream mileages cited here do not include the White River, which flows intermittently through the southwestern portion of the Schell RA. It flows below spring sources and is impounded to form Adams-McGill Reservoir (Aquatic Habitat Map). About 3.5 mi of the stream is located on public land but it differs from all of the other fish streams in being a warm-water, central valley stream, rather than a mountain stream. Several of the streams that were dry on public lands, contained fish further upstream on Forest Service land and may contain fish on public land in wetter years than 1976, a dry year. Also, several other potential fish streams were not surveyed in 1976. However, since the 1976 stream survey is the best available data, it will be assumed that it accurately reflects streams and their habitat condition in the Schell RA.

Most of the stream habitat was rated as fair (60 percent) in 1976, although 14 percent was considered excellent and 16 percent poor. The major reason for the fair and poor ratings were poor bank cover and bank stability, as well as low quality instream habitat problems most likely caused by livestock use. About 21 mi of stream habitat was lost due to piping, ditching or other methods of diverting flow for agricultural use. As mentioned in the Vegetation section, several streams are flowing in manmade channels rather than natural channels and therefore are limited in their potential to achieve high habitat quality. Game species present in these streams include cutthroat trout, rainbow trout, brown trout, and brook trout (Table 2-10). Trout are stocked on an annual basis in Cleve and Kalamazoo creeks.

Several native fish exist within or near the Schell RA and are of special concern since they are considered threatened or endangered by the state of Nevada, the federal government, or Deacon et al. (1979). Documentation of the

Table 2-10. Habitat condition and fish presence in streams in the Schell Resource Area, 1976 survey.

Stream	Location	Allotment[a]	Total length (mi)	BLM administered (mi)	Fish spp[b,c]	Habitat condition	Conflicts
Bassett Creek	E. side Schell Creek Range	Bassett Creek	4.7	1.0	R.T. C.T.	Fair	Livestock
Bastian Creek	E. side Schell Creek Range	Majors	2.3	1.9	R.T. B.N.T.	Fair	Livestock
Big Spring Creek	S.E. Snake Range	Hamblin Valley Chokecherry	7.0	4.0	R.S. U.C.	Good	Livestock water diversion
Big Wash Creek	E. side S. Snake Range	Baker Creek	10.8	0.5	R.T. C.T. B.N.T.	Excellent	Livestock
Cherry Creek	E. side Quinn Canyon Range	Batterman Wash	9.0	1.0	R.T.	Poor	Livestock
Cleve Creek	E. side Schell Creek Range	Cleveland Ranch	8.5	1.8	R.T. B.T. B.N.T.	Fair	Livestock water diversion
Eight Mile Creek	W. side N. Snake Range	Muncy Creek	3.5	3.5	R.T.	Fair	Livestock pipeline
Geyser Creek	E. side S. Schell Creek Range	Geyser Ranch	2.0	2.0	R.T. B.T.	Excellent	Livestock
Hampton Creek	E. side N. Snake Range	Smith Creek	3.5	0.5	C.T.	Excellent	-
Kalamazoo Creek	E. side Schell Creek Range	Muncy Creek	7.3	2.3	R.T. B.T. B.N.T	Fair	Livestock
McCoy Creek	E. side Schell Creek Range	McCoy Creek	4.6	0.8	R.T. C.T.	Good	Pipelines, dam
Meadow Creek	E. side Schell Creek Range	Meadow Creek	3.5	0.8	C.T. B.N.T.	Fair	Impoundments, livestock
Meadow Valley Creek	S. side Wilson Creek Range	Wilson Creek	18.0	5.0	D.S. P.S.D. M.V.S.D.	Fair	Livestock
Negro Creek	W. side Mt. Moriah	Negro Creek	11.4	5.0	R.T. B.T. C.T. B.N.T.	Poor	Livestock
North Creek	E. side S. Schell Creek Range	Geyser Ranch	3.0	3.0	R.T. B.T. C.T.	Excellent	None
Odger's Creek	E. side Schell Creek Range	McCoy Creek	3.7	0.5	R.T. C.T.	Fair	-
Piermont Creek	E. side Schell Creek Range	Muncy Creek	6.7	2.0	R.T. B.T. C.T. B.N.T.	Fair	Livestock diversion channel
Pine (Ridge)	W. side S. Snake Range	Willard Creek	2.5	2.0	C.T.	Fair	Livestock Channelization
Siegel Creek	E. side Schell Creek Range	Tippett Pass	2.3	0.8	R.T.	Excellent	Dam
Silver Creek	S. side N. Snake Range	Smith Creek	15.0	1.8	R.T. B.T.	Fair	Livestock
Snake Creek	E. side S. Snake Range	Baker Creek	13.5	3.5	R.T. B.T. C.T. B.N.T.	Fair	Livestock
Strawberry Creek	E. side S. Snake Range	Baker Creek	5.8	0.2	R.T. B.T. C.T.	Excellent	Livestock
Vipont Creek	E. side Schell Creek Range	Cleveland Ranch	3.4	0.8	B.T. C.T. B.N.T.	Excellent	Livestock
White River	S.E. Schell Resource Area				R.T., B.T., C.T., B.N.T., L.B., B., C., M., HWRS, M.D., W.S.D., W.R.S		Irrigation, exotic spp.
Willard Creek	W. side Mt. Wheeler	Willard Creek	2.5	1.4	R.T. C.T.	Fair	Livestock
Wilson Creek	N. side Mt. Wilson	Wilson Creek	4.5	3.5		Fair	Livestock

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[a] Allotment stream drains into.

[b] R.T. - Rainbow trout, B.T. - Brook trout, B.N.T. - Brown trout, C.T. - Cutthroat trout, R.S. - Red shiner, U.C. - Utah chub, S.D. - Steptoe dace, D.S. - Desert sucker, L.B. - Largemouth Bass, B. - Bullhead, C. - Carp, M. - Mosquito fish, HWRS - Hiko, White River Spring Fish, M.D. - Moopa dace, WRS - White River Speckled Dace, WRS - White River Spine Dace, P.S.D. - Panaca Spinedace, M.V.S.D. - Meadow Valley Speckled Dace.

[c] Includes possible occurrences.

Source: USDI, BLM URA-3, Fisheries Section (1980).

occurrence and distribution of some species is incomplete.

The Pahrump killifish, a federally listed endangered species, exists within the resource area at the Shoshone ponds refugarium (Table 2-11). Killifish were transferred to the refugarium in 1972 due to limited natural habitat and again in 1976 when the last remaining native habitat, Manse Spring in Pahrump Valley, was drained for irrigation. The population in Shoshone Ponds is surviving and reproducing. Other populations exist at Corn Creek (Desert National Wildlife Range) and on the University of Nevada campus at Las Vegas.

The White River springfish is found in several private springs in the White River valley, primarily south of the Preston-Lund area. This fish is apparently well established in some of these springs and doing well despite some alterations in its habitat.

The Hiko White River springfish formerly occurred in Hiko Spring in the southwestern portion of the Schell area. Predation by largemouth bass eliminated them from this spring but a few still occur in Crystal Springs south of the Schell Area.

Steptoe dace historically occurred in Butte and Steptoe valleys of the Egan Resource Area, and Spring Valley of the Schell Resource Area. Steptoe dace were introduced into the Shoshone ponds refugarium in 1977 to help insure their survival and a new population was discovered in 1981 in the northern part of the Schell RA.

Status of the White River spinedace and the White River desert sucker within the area is presently uncertain, but they may occur within the Schell RA.

One endemic trout, the Utah cutthroat, occurs within the Schell area. This subspecies of trout is considered sensitive by the state of Nevada and may become a candidate for federal listing. Pure populations of this trout occur in Hampton, and Pine (Ridge) creeks. Habitat in these streams, however, is limited, particularly on public lands.

WILD HORSES

The Wild and Free-Roaming Horse and Burro Act became law on December 15, 1971. With the passage of this act, the authority to manage wild horses and burros on public land was assigned to the BLM and US Forest Service. The Act proclaimed that wild and free-roaming horses and burros are protected from capture, branding, harrassment, or death. They are to be considered, in the area where they were found in 1971, as an integral part of the natural system.

Wild horses are currently found in 6 herd units on the Schell RA (Wildlife Map). These herd units encompass all or part of 34 grazing allotments. Herd units have been established based upon past historical horse use areas and inventory data gathered from 1973 to 1980. The assignment of specific animals and lands to a herd unit is somewhat indefinite as there is some movement between herds. Horses in the Antelope Herd also utilize the Elko BLM District; those in the Wilson Creek Herd range over portions of Utah as well as the Las Vegas BLM District; the Dry Lake Herd also utilizes part of the Las Vegas District. Therefore, the number of horses in the Schell RA varies depending on where they were when surveys were conducted. Table 2-12 lists the Herd Units, allotments concerned, number of horses during the most recent inventories, and conflicts. There have been few sightings of wild horses during recent inventories conducted in the Moriah (one in 1979) and White River (none in 1979) Herd Management Areas.

Wild horses have periodically been removed from the Schell RA by BLM. Over 500 horses were removed from the area in early 1980. Illegal removal may also occur. Wild horses in the Schell RA are generally healthy and reasonably adapted to their environment. The well-being of the herds can be attributed to an adequate supply of forage, water, cover and solitude.

Major problems which may be faced by the wild horse herds in the future include competition for food and water with livestock, fences that inhibit movement to areas of forage or water and conflicts with humans. Conflicts by Herd Management Area are shown in Table 2-12.

RECREATION

The majority of the outdoor recreation occurring in the Schell RA is of the dispersed variety. Major activities include hunting, fishing, and sightseeing-driving for pleasure; other less utilized recreation includes camping, ORV use, spelunking, hiking, rockhounding, cross-country skiing, snowmobiling, and pine nut and fire wood gathering. The BLM has little data on visitor use in the area. Most recreation apparently occurs on adjacent Forest Service lands, as well as in Spring Valley State Park and the Wayne Kirch Wildlife Management Area, both managed by the state of Nevada. The major site specific recreation area in this portion of Nevada is Lehman Caves National Monument managed by the National Park Service (See Area Map for location of these sites.) According to the 1977 Nevada State Comprehensive Outdoor Recreation Plan, the majority of the recreationists in White Pine, Lincoln, and Nye counties are Nevada residents with only an estimated 2 percent from out of state.

FISHING

The BLM reports 1,567 fisherman days (URA-3, based upon a 3-year average). Fishing on lands administered by the US Forest Service amounts to 1,934 fisherman days. The majority of the fishing visits occur on the Wayne Kirch Wildlife Management Area (21,381) and Eagle Valley Reservoir (33,015) located in Spring Valley State Park.

HUNTING

Big game hunting, principally deer hunting, is a popular activity on the Schell RA. An estimated 5,665 hunter days for big game are made to the BLM portions of the resource area. Of these, 5,265 days are deer hunting. The US Forest Service reports approximately 29,000 hunter days on the Schell RA-related lands they administer, and the State of Nevada reports over 1,200 yearly

Table 2-11. Summary of occurrence and legal status of protected fish and fishes recommended for protection in or near the Schell Resource Area.

Common name	Scientific name	Classification[a] State	Classification[a] Federal	Recommended status (Deacon et al. 1979)	Occurrence within Schell Resource Area
Trout					
Utah cutthroat	*Salmo clarki utah*	S		T	Hampton's Creek, Pine (Ridge) Creek
Minnows					
Steptoe dace	*Relictus solitarus*	T			Shoshone Ponds refugarium, Lookout Spring
Killifishes					
Pahrump killifish	*Empetrichthys latos latos*	T	E	E	Shoshone Ponds refugarium
White River springfish	*Crenichthys baileya*	T		T	Private springs near Sunnyside

Source: USDI, BLM URA-3, Fisheries (1980).

[a] T = threatened, E = endangered, S = sensitive.

Table 2-12. Wild Horse Herd Unit characteristics for the Schell Resource Area.

Herd Unit	Size (ac)	Allotments	Herd Size 1973	Herd Size 1975	Herd Size 1979	Herd Size 1980	Conflicts Livestock	Conflicts Fences	Conflicts Humans
Antelope	311,869	Becky Springs, Chin Creek, Sampson Creek, Tippett, Tippett Pass, Goshute Mt., Deep Creek		321		252	X	X	
Wilson Creek	691,000	S. Spring Valley, Cottonwood, Hamblin Valley, Geyser, Wilson Creek	151		130		X	X	X
Dry Lake	496,500	Narrows, Geyser, Grassy Mt., Wilson Creek, Fox Mt., Sunnyside	113	13	63		X	X	
Seaman	340,100	Fox Mt., Oreana Springs, Timber Mt., Needles, Seaman Springs, Wilson Creek, Forest Moon, Batterman Wash, Sunnyside, Dry Farm		118	20		X	X	X
Moriah	83,673	Pleasant Valley, Tippett, Mill Spring, Indian George		5	1		X	X	
White River	76,570	Hardy Springs Reserved for Wildlife		27	0			?	

Source: USDI, BLM URA - 3 and 4, Wild Horses (1981).

hunting visits to the Wayne Kirch Wildlife Management Area.

Upland game hunting, primarily for sage grouse, accounts for 4,078 hunter days on the BLM portions of the Schell RA. Waterfowl hunting accounts for 390 hunter days on the BLM portions of the resource area.

CULTURAL RESOURCES

A total of 828 cultural resource sites have been identified within the Schell RA. Covering a timespan of over 12,000 years, these prehistoric and historic sites represent sporadic but continuous use of the resource area, and include isolated finds of the Paleo-Indian tradition, the earliest prehistoric peoples known in North America. More abundant, however, are sites related to the hunter-gatherers of the Desert Archaic tradition and the more recent Shoshone and Southern Paiute groups in the Protohistoric period. Sites associated with the horticulturally-based Fremont culture, who preceded the Shoshone, also occur in portions of the resource area. The various remains of these aboriginal cultures are classified into a variety of site types: open campsites, rock art, artifact scatters, quarries, rockshelters, isolated finds, and structural sites.

Historical use of the Schell RA began with early exploration efforts during the first half of the nineteenth century. Later, the establishment of overland mail routes, mining, agriculture, and livestock operations led to the growth and settlement of the area. Historic trails, mining buildings, homesteads, and cemeteries are the remnants of these developmental stages.

A Class I inventory and literature overview has been completed for the Ely District (Gaudy 1979, James 1981), although only one percent of the resource area (46,329 ac) has been covered at the Class III level and only limited sample inventories (Class II) have been conducted within the Schell RA (Busby 1981).

Based on existing site data, sensitive cultural resource areas include the following: Pony Express Route (with a one-mile buffer); Baker-Garrison area; North Spring Valley; Spring Valley Slough Archaeological District; Eagle Valley; and several historic mining districts. It is also possible to designate sensitive areas based on the presence or absence of certain natural features; for example, pinyon-juniper vegetation, springs, former lake shores and terraces, and sand dune zones are more likely to have associated cultural resources.

Three "National Register of Historic Places" sites have been identified within the study area. Bristol Wells (HS27-04-43) is the site of Bristol City, an early mining town of the 1880s. All that remains of the town are three charcoal ovens, furnace residue, and a single stone building. The site is in good condition although several structures have been built on the site in recent years. White River Narrows Archaeological Site (AR27-04-110) consists of several petroglyph and pictograph panels as well as stone circles, a quarry site, open campsite and rock wall. Other than some historic graffiti from the 1920s and 1930s, the site is relatively undisturbed and in good condition. Mt. Irish Petroglyphs (AR27-04-7) has been determined eligible and is in the process of being nominated to the National Register. The site is presently in excellent condition with panels depicting bighorn sheep, deer, and many abstract and geometric designs.

PALEONTOLOGY

Published and unpublished data on the paleontology of the Schell RA shows that important vertebrate and invertebrate fossils are widespread (records of fossil plants thus far are sparse) (Miller 1981). Fossil invertebrates abound in the Schell RA, mostly in Paleozoic rocks of the mountain ranges. The known fossil vertebrates of the area generally occur along the exposed margins of the valleys and bases of the ranges. Fossils collected, but as yet unstudied, include horse, camel (at least two types), mastodont, antilocaprid, oreodont, carnivore, protoceroted, and others (Miller 1981). Considerably more field investigation is needed to fully evaluate the paleontological resources of the Schell RA.

Caves are numerous in the resource area; some have produced Pleistocene fossils and others potentially could. A number of extinct as well as extant vertebrates have been recovered from them. In one cave a bone from a previously unknown gigantic bird was found. In life it would have been twice the size of a condor and was perhaps the largest flying bird ever. More specimens are needed to better understand this unique bird and more could be present in eastern Nevada's caves.

ECONOMICS

The Schell RA encompasses parts of White Pine, Lincoln, and Nye counties in eastern Nevada. The area is sparsely populated and averages less than 0.5 person per square mile (estimated). Within the Schell RA there are no incorporated towns, although there are 3 small hamlets (Baker, Hiko, Ursine) and one industrial settlement (Atlanta mine in Lincoln County) (BLM, Schell PAA 1981). However, several larger settlements are in close proximity to the resource area, including Ely, McGill, and Ruth in White Pine County, and Pioche and Caliente in Lincoln County. Ely is the trade center for the area. Agriculture, basically livestock-oriented, and mining are the major basic industries, and most of the commodities are either imported or exported, so that the economic structure is relatively simple, with even wholesale and retail trade composed of more than 50 percent importation (outside purchase).

AFFECTED SECTORS

Agriculture

Agriculture in the Schell RA is comprised almost exclusively of range livestock operations. Table 2-13 indicates typical ranch budgets for groups of ranch sizes and operations in the area. In general, the trend in the region in the past 30 years has been to larger ranches, with a relatively stable 85-95 percent of total sales from livestock.

The agriculture sector in the region provides

Table 2-13. Costs and returns for cattle and sheep operations in the Schell Resource Area.

	Cattle		
	Herd Size		
	350	350-799	800
Item	Total Value	Total Value	Total Value
Sales:			
Steer calves	28,893	55,813	198,638
Heifer calves	16,574	32,320	113,810
Yearling steers	--	--	--
Yearling heifers	--	--	--
Cull cows	8,926	16,634	17,852
Total	54,393	104,767	330,299
Total per cow	256.57	254.29	225.77
Cash Costs:			
BLM grazing fee	2,060	5,824	7,821
Forest grazing fee	439	1,643	1,632
Private range lease/rent	--	--	4,163
State lease	--	--	--
Hay (produce)	4,642	5,560	31,044
Hay (purchase)	--	--	--
Protein supplement	--	--	--
Irrigated pasture	1,363	3,045	6,291
Salt and mineral	318	618	2,560
Concentrate feeds	--	--	--
Veterinary and medicine	1,272	2,472	7,169
Hired trucking & marketing	1,132	2,200	2,721
Fuel and lubricants	2,512	4,882	7,695
Repairs	1,306	2,538	10,943
Land taxes	4,013	7,512	24,754
Other taxes	361	700	--
Insurance	1,532	2,979	7,907
Interest on operating capital	1,584	3,269	7,787
General farm overhead	1,900	3,692	9,510
Other cash costs	--	--	--
Hired labor	1,906	7,419	27,993
Total cash costs	26,340	54,353	159,990
Other Costs:			
Family labor	5,728	7,419	9,335
Depreciation	5,466	10,621	34,709
Interest on investment			
Other than land	18,211	35,391	141,672
Interest on land	46,830	87,660	315,333
Total other costs	76,235	141,091	501,049
Total all costs	102,575	195,444	661,039
Return above cash costs	28,053	50,414	170,309
Return above cash costs and family labor	22,325	42,995	160,974
Return to total investment	16,859	32,374	126,265
Return to land	-1,352	-3,017	-15,407

Sheep	
Item	Total Value
Sales:	
Lambs	146,380
Ewes	21,938
Wool	34,480
Wool Incentive Payment	13,447
Unshorn Lamb Payment	2,941
Total	219,186
Total per ewe	61.53
Cash Costs:	
BLM permit	5,518
Forest permit	1,564
Other BLM	3,993
Sheep pellets	--
Hay (Purchase)	--
Hay (Produce)	--
Grain (Purchase)	--
Protein supplement	--
Other feed	--
Salt & minerals	677
Spray & dipping	356
Vet & medicine	463
Marketing	641
Trucking	5,664
Shearing & tagging	6,412
Utilities	1,247
Lamb promotion	1,496
Organizations	178
Legal & acct.	1,496
Wool storage	178
Predator control	3,989
Ram death loss	1,852
Machine fuel & lube	3,811
Repairs	5,236
Labor	30,851
Land tax	13,737
Other tax	534
Insurance	2,600
General farm overhead	3,099
Interest on oper. capital	6,118
Total	101,710
Other Costs:	
Family labor	20,568
Depreciation	14,996
Interest on investment other than land	36,475
Interest on land investment	160,290
Total	232,329
Return above cash costs	117,476
Return above cash costs & family labor	96,908
Return to total investment	81,912
Return to land investment	45,437

Assumptions: Cattle- Calving rate 88%; calf loss birth to weaning 6%; annual cow loss 3%; herd replacement rate 13%; 20 cows per bull.
Sheep- Average herd size 3,562 ewes; docking rate 100%; lamb death loss 12%; ewe death loss 6%; replacement rate 23%; 50 ewes per ram.

about 4.5 percent of the employment and 2 percent of the total regional income, compared to 14.5 percent and 16 percent, respectively, for the minerals and mining sector. Table 2-14 lists the percentages of imported goods and services by category for ranchers (estimated by ranchers themselves).

Table 2-14. Imported goods and services for ranchers in the Schell Resource Area.

Goods and Services	% Imported
Hay and grains	0
Supplemental feeds	67
Veterinary and dairy	70
Fuel and lubricants (retail)	20
Equipment	50
Trucking Service	100
Credit	99
Household items	80
Labor (nonfamily)	80

Source: Personal interviews

Recreation and Wildlife

Hunting, fishing, and trapping occur on the Schell RA, but have relatively limited effects on the economy, accounting for less than one percent regional activity and about 75 jobs. Most of the activity occurs on Forest Service lands (88 percent).

Government

Government employment and income constitute 18.4 percent and 15 percent, respectively, of the regional economy (Table 2-15). The state and local governments constitute the majority of government employment in the region, although federal government employment is about equal to that of state and local governments in Nye County.

Income and Employment

Table 2-15 lists the sectoral and total income and employment and relative importance of each sector for the 3-county region. Unemployment rates as of March 1980 were 3.2 percent for Lincoln County, 3.5 percent for Nye County, and 6.9 percent for White Pine County. The state average was approximately 6.3 percent unemployed. In all counties, unemployment has increased slightly since the 1980 dates. Annual per capita income in 1977 was about $6,000, although White Pine County was significantly higher ($6,600), which, coupled with higher unemployment rates, reflects the predominance of the mining sector.

Population

First settled as a combined result of mining activities and early livestock ranching operations in the latter half of the nineteenth century, the Schell RA has remained relatively isolated and sparsely populated, despite a century-long history of sharp population fluctuations correponding to the shifting fortunes of the mining industry. Recent population trends continue to reflect such shifts. The population of Lincoln County increased to 3,732 in 1980 (+46.0 percent over 1970) and that of Nye County increased to 9,048 (+61.6 percent over 1970) (US Bureau of Census 1981), largely as a result of expanding mining and mineral processing development. White Pine County lost population during the 1970s, dropping from 10,150 residents in 1970 to 8,167 in 1980, a decrease of nearly 20 percent (US Bureau of the Census 1981). This may be attributed to the Kennecott Copper Corporation's decision to close the open-pit mine at Ruth in 1978 (BLM, Schell PAA 1981). Within the past year, however, there has been an increase of mining activity and geological energy exploration in the area, causing an apparent resurgence of population growth in White Pine County.

Tax Base and Fiscal Structure

Since the tax base and revenues for Nye County are heavily dependent on federal activities (military), as well as urban centers which are removed from the Schell RA, the primary effect of the proposed action or alternatives on tax base would occur in White Pine and Lincoln counties. Revenues for each county are listed in Table 2-16 for 1979-80. Existing bonding capacity is $4,662,765 for White Pine County and $1,273,612 for Lincoln County.

SOCIAL CONDITIONS

This section describes the relevant demographic and social characteristics, attitudes, values, perceptions, and relationships of diverse groups differentially affected by decisions regarding the management of public lands in the Schell RA. In this analysis, the specific communities impacted by public land use decisions were categorized as ranchers, other local residents, and regional/national special interest organizations. Data on ranchers were obtained through lengthy informal personal interviews in June 1981 with 26 (45 percent) of the owner/operators utilizing BLM managed lands in the Schell RA. To obtain data on the local community, 22 nonranching residents in White Pine and Lincoln counties, including government leaders, businessmen, and persons with organizational or recreational interests related to public land use, were interviewed. The primary data on outside organizations were collected through informal telephone interviews with state representatives of 8 wild horse, wildlife, recreation, preservation, and land use organizations. These interview data were supplemented by comments and letters submitted during the scoping process and by secondary data reported by Barone et al. (1979), the Governor's Futures Commission of Nevada (1980), and the Schell RA Planning Area Analysis (1981).

The basic findings from these analyses follow. For a comprehensive discussion of both the metho-

Table 2-15. Total income and employment in 1978 for the 3-county region in and around the Schell Resource Area.

	Employment		Income[b]	
	Persons[a]	Percent	$1,000	Percent
URBAN AND SUBURBAN LANDS:				
Construction	139[c]	1.4%	4,161[c]	2.4%
Manufacturing	429[c]	4.4%	8,659[c]	4.9%
Trade	1,150	11.7%	11,178[c]	6.3%
F.I.R.E.[d]	209[c]	2.1%	3,065[c]	1.7%
Services (includes gaming)	3,900	40.0%	83,700	47.4%
Government	1,810	18.4%	26,608	15.1%
Other	34[c]	0.3%	563[c]	3.0%
Subtotal	7,671	78.0%	137,934	78.2%
AGRICULTURAL LANDS:				
Agriculture	430	4.4%	3,327	1.9%
UTILITY:				
Transportation and Public Utilities	300	3.1%	7,159	4.1%
MINERALS:				
Mining	1,430	14.5%	27,991	15.9%
Total	9,831	100.0%	176,411	100.0%

[a] Nevada Employment Security Department, Balance of State Area Labor Review, Fall 1979.

[b] Regional Economics Information System, Bureau of Economic Analysis, 1979.

[c] Estimates calculated by BLM, Ely.

[d] Finance, Insurance and Real Estate.

Table 2-16. Revenues for Lincoln and White Pine counties, Nevada.

	Lincoln	White Pine
County Real Property Tax	$ 714,895	$ 1,310,831
City Personal Property Tax	77,804	283,660
County Investments	78,134	764,678
Other County Sources		
Total	$ 1,068,424	$ 2,822,566
State and Federal Sources	460,897	796,973
Grand Total	$ 1,529,321	$ 3,619,539

dology and findings of this social assessment, see the technical report by Krannich, Pitcher, and Spykerman (1982).

RANCHING COMMUNITY

For this sample the average age of ranchers was 55.9 years and their average level of education was 12.4 years, with 83 percent of the interviewees having at least a high school education and 17 percent having a college degree. Overall, ranchers tend to be older and have on average more education than the general adult populations in White Pine, Lincoln, and Nye counties.

As a group, ranchers have strong historical and family ties to the area. Many ranches had been worked since the 1860s by the same family over 5 generations. Seventy-three percent (19) of the ranchers interviewed were raised in the local area and 81 percent (21) had been ranching all their lives.

The age, level of education, historical community ties, and occupational stability of ranchers partially explain the finding that ranchers tend to identify strongly with the local area, to be very concerned and involved in community issues and to be proportionally over-represented in positions of community leadership, for example, county commissioners. The ranching community is an important source of stability, continuity, and leadership in the local culture.

Ranching Life-Style and Attitudes

Ranching in Nevada has a very rich history and a long tradition. Ranchers followed and descended from the explorers, trappers, and miners and were among the first to settle the western rangelands. To most ranchers, ranching is more than an occupation, it is a life style, a sum of unique activities that are valued and closely held. According to the ranchers interviewed, the primary characteristics and amenities of this lifestyle included an emphasis on family (family rather than corporate ranches are still the norm in the Schell RA), freedom and independence in the structure of work and decision-making, the diversity of work, cohesive rural community life, beauties of the natural environment, traditions and hard work.

Most respondents felt that worsening economic difficulties are severely threatening the continuation of the ranching occupation and lifestyle. Only 23 percent (6) of the ranchers interviewed felt that they had done well financially, 54 percent (14) felt they were barely making it, and the remaining 23 percent (6) felt they were losing money. Given these conditions the long-term trend in consolidation of ranches is likely to increase. Ranchers felt that present economic and social changes were eroding opportunities to pursue their valued way-of-life, and perceived an accompanying loss in the viability of the ranching community. These trends, along with what ranchers perceive to be counterproductive management of public lands, were identified as contributing to reduced grazing levels in the area and a decline in the number of active ranchers.

Rancher Land-use Conflicts

As descendants of the original land users who grazed livestock in the area freely, ranchers feel a certain possessiveness about the range. The majority of ranchers in this study, however, supported the concept of multiple land use management and felt that with proper management, wildlife, recreation, and mining uses are compatible with grazing. These ranchers had not experienced serious abuses of land and property by other users. Nevertheless, ranchers generally believe that they are better informed and have more right to determine priorities than government managers, sportsmen, recreationists, environmentalists, and others who have less consumptive interests and only intermittently visit or use the lands. They claim that grazing (the production of food and fiber) should be the first priority, and strongly oppose the assignment of grazing areas to wilderness preservation, wild horses, or other uses that preclude livestock grazing.

In general, feelings of powerlessness over land use decisions, a perceived lack of cooperation and sensitivity from management agencies, and the influence of external interests via legislation and access to higher levels of government have tended to create frustration, resentment, and alienation among the ranchers. They feel threatened by the enforcement of national policies that seem impractical in the local context and appear to ignore rancher "rights," their investments and their dependence on public lands for livelihood. These conflicts have contributed to the overall strong, but weakening, support among ranchers for the Sagebrush Rebellion and the desire to have control of lands closer to home.

At present, the relationships of ranchers with the BLM and other groups are strained. Ranchers recognize their continuing dependency on the BLM, and therefore tolerate the bureaucracy and try to work within the system. From experience, however, ranchers have grown to be distrustful, and they limit interaction to necessary transactions. The implementation procedures outlined in Chapter 1, if employed effectively, may be important mechanisms for involving and educating ranchers and thereby improving these relationships.

LOCAL COMMUNITY

Because such a large proportion of the land in eastern Nevada is publicly owned, its management also impacts on the nonranching local community for whom it has value for esthetics, hunting, recreation, and other outdoor interests. The vast majority of local community respondents in this study felt that land use conflicts in the Schell RA were minimal and could be adequately managed with a realistic multiple land use policy. The priorities of local residents strongly supported livestock grazing, with considerable support also evident for wildlife enhancement, and recreational access. Wild horses were given a low priority, with most favoring herd limitations.

According to survey results, local residents perceive a significant indirect effect of land use management on the local community via its effects on ranching. The success of ranching was viewed as important to the overall community because it is perceived to provide stability to the economy. Also, ranching was viewed as central to the local life-style both in its contributions to the easy-going, family-oriented, relaxed pace of life and its effects on the retention of open space, a relatively pristine natural environment, and diverse recreational opportunities.

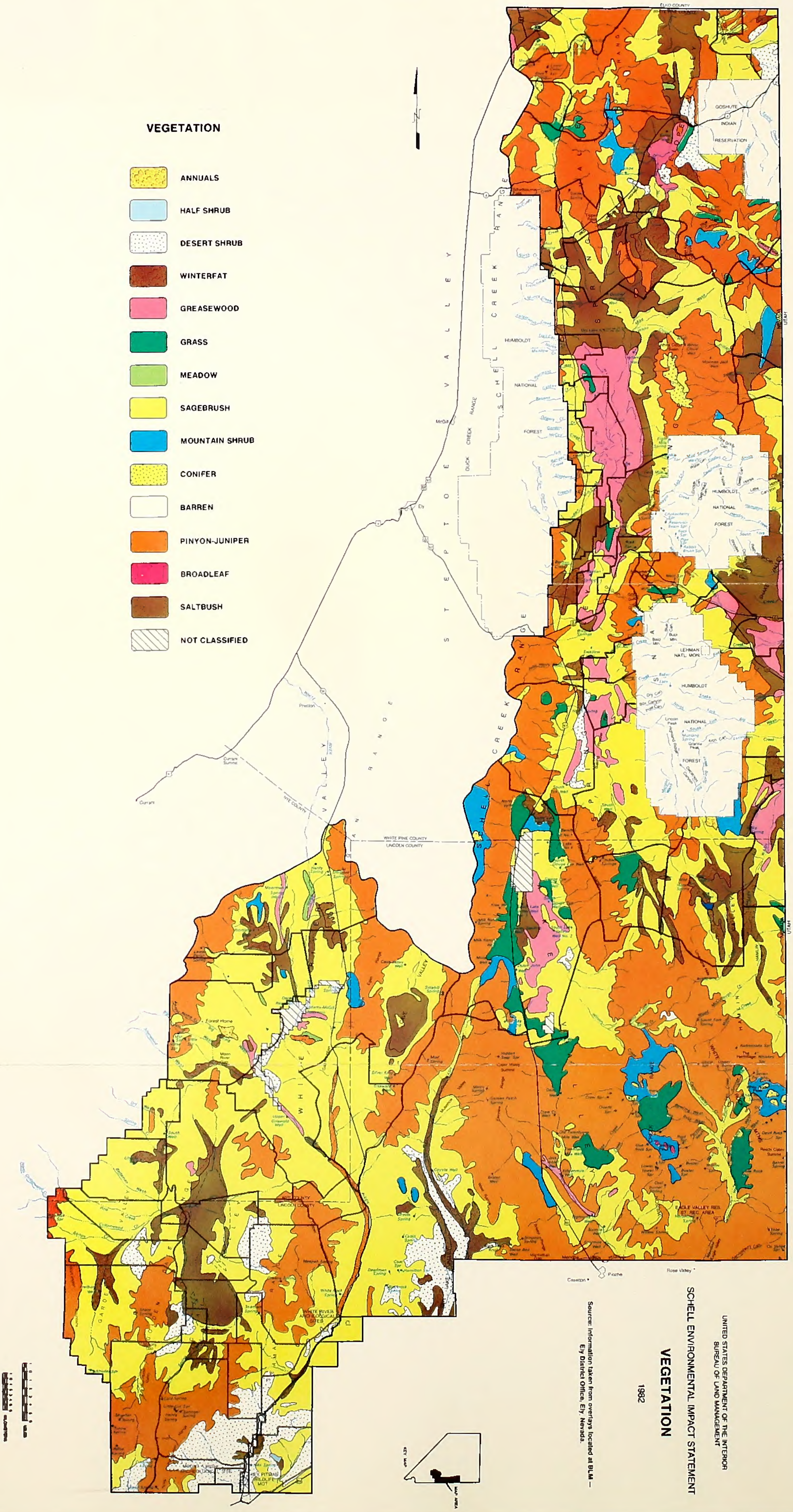
In light of these values it is not surprising that community residents share the dissatisfactions of the ranchers (although with less intensity) with nonlocal control, the bureaucratization and perceived unresponsiveness of the BLM, and the influence of "outside" environmental groups. Most of the nonranchers interviewed supported continued federal management of public lands so long as local management decisions could be flexible and responsive to the needs of the area.

REGIONAL AND NATIONAL COMMUNITIES

Although a relatively small percentage of regional or national populations ever visit or stay in this area, a significant proportion of these populations do experience intangible but real pleasures from observing or simply being aware of such things as free-roaming herds of wild horses, substantial numbers of big game and other wildlife, the preservation of natural habitat and wilderness areas, and the accessibility of recreation areas. The 8 interest groups contacted for this study jointly have several hundred thousand members. The representatives of these groups were virtually unanimous in espousing a need to insure the basic ecological integrity of the Schell RA and a realistic adherence to the concepts of multiple use within the confines of the carrying capacity of the land.

A consistent concern expressed by these representatives was the inability of BLM to assess and carry-out an integrated, long-term management perspective. They also were concerned with what they perceive to be BLM's tendency to give priority to livestock grazing to the detriment of other uses. In general, these groups believed that the condition of the lands administered in the Schell RA by BLM had deteriorated over time and felt that because of poor resource utilization and mismanagement the grazing capacity is low.

The groups differed regarding recommendations for dealing with this situation. Representatives of wild horse groups opposed herd reductions by BLM without careful assessment of resource conditions and herd trends. The wildlife group representative was concerned about protection of riparian areas and the sagebrush habitat, and suggested reductions in livestock and wild horses to allow for increased wildlife habitat. Environmental groups suggested overall reductions in grazing use to counter damage to the ecosystem and preserve and protect the soils, riparian habitat, native plant and animal species, archaeological sites, and wilderness areas. The representatives of a major wilderness group and an outdoor recreation group felt that a revised management approach was needed, giving more attention to nonconsumptive uses. Citing limited funds and personnel, and competing user demands, the representative of a public lands advisory group expressed support for present BLM management procedures. With this one exception, all these groups felt that to adopt a program of realistic multiple land use, BLM would need to make radical changes in its management priorities and procedures.



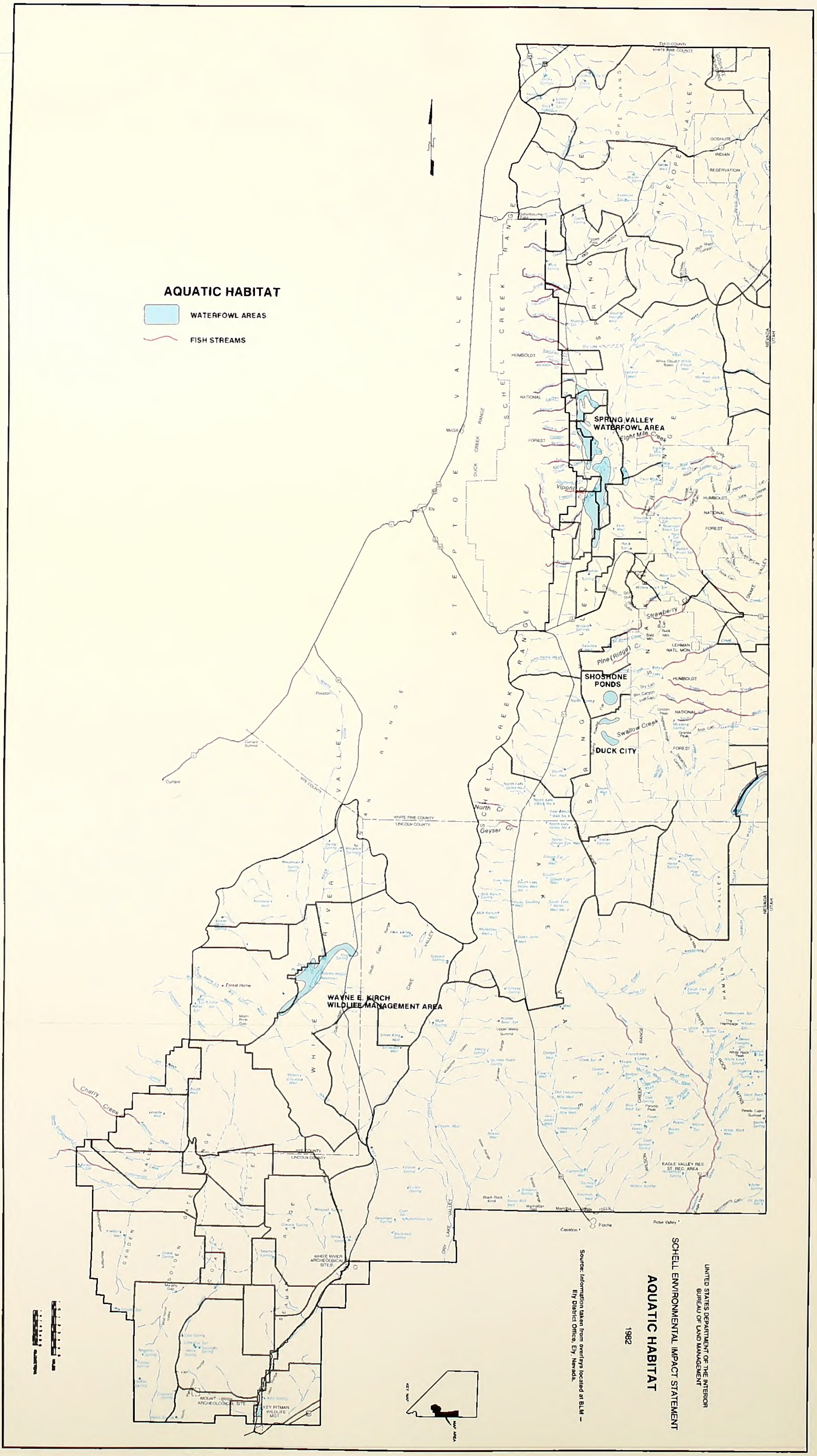
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SCHELL ENVIRONMENTAL IMPACT STATEMENT

VEGETATION

1982

Source: Information taken from overlays located at BLM – Ely District Office, Ely, Nevada.



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

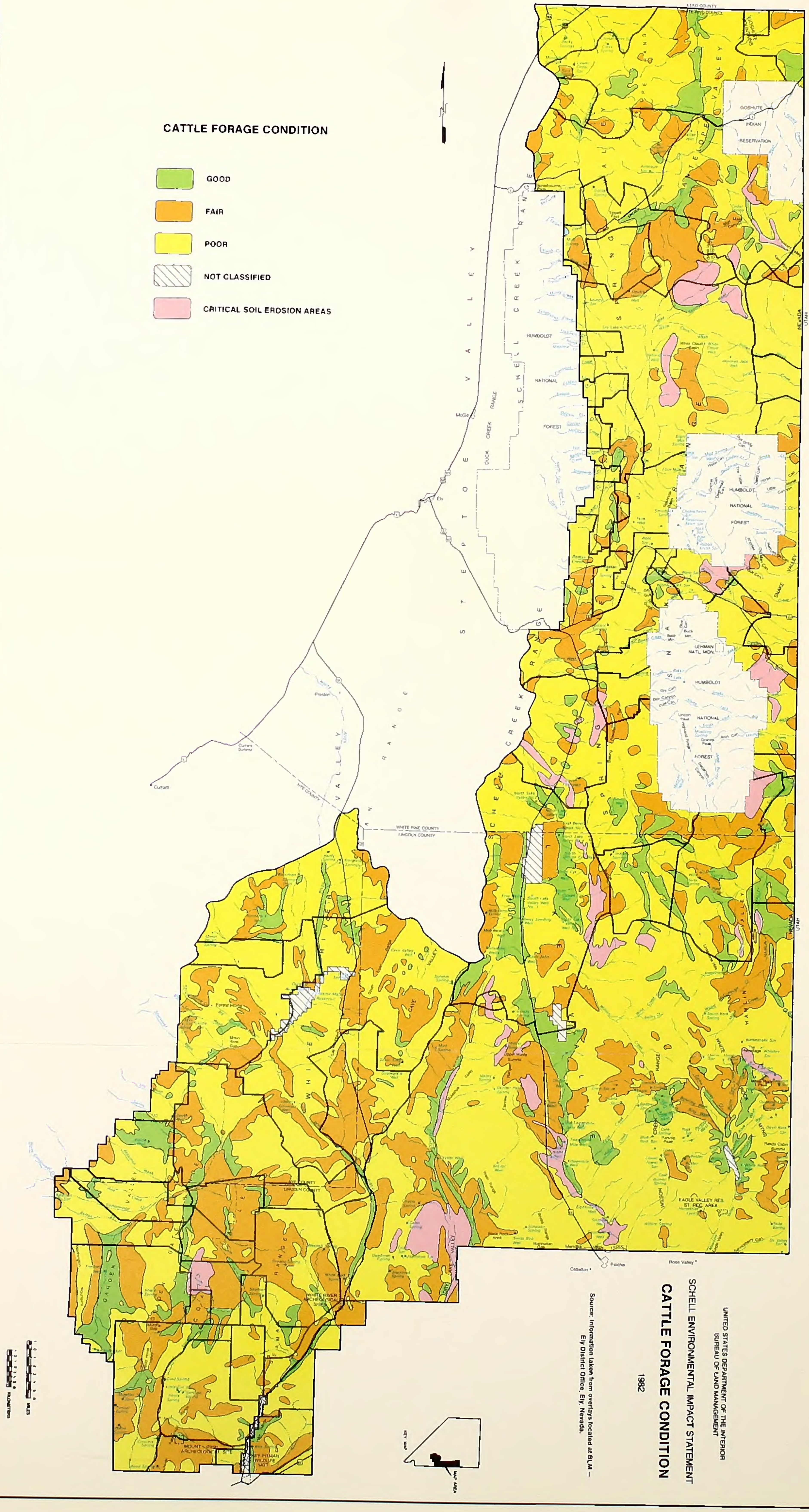
SCHELL ENVIRONMENTAL IMPACT STATEMENT

AQUATIC HABITAT

1982

Source: Information taken from overlays located at BLM – Ely District Office, Ely, Nevada.

AQUATIC HABITAT



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SCHELL ENVIRONMENTAL IMPACT STATEMENT

CATTLE FORAGE CONDITION

1982

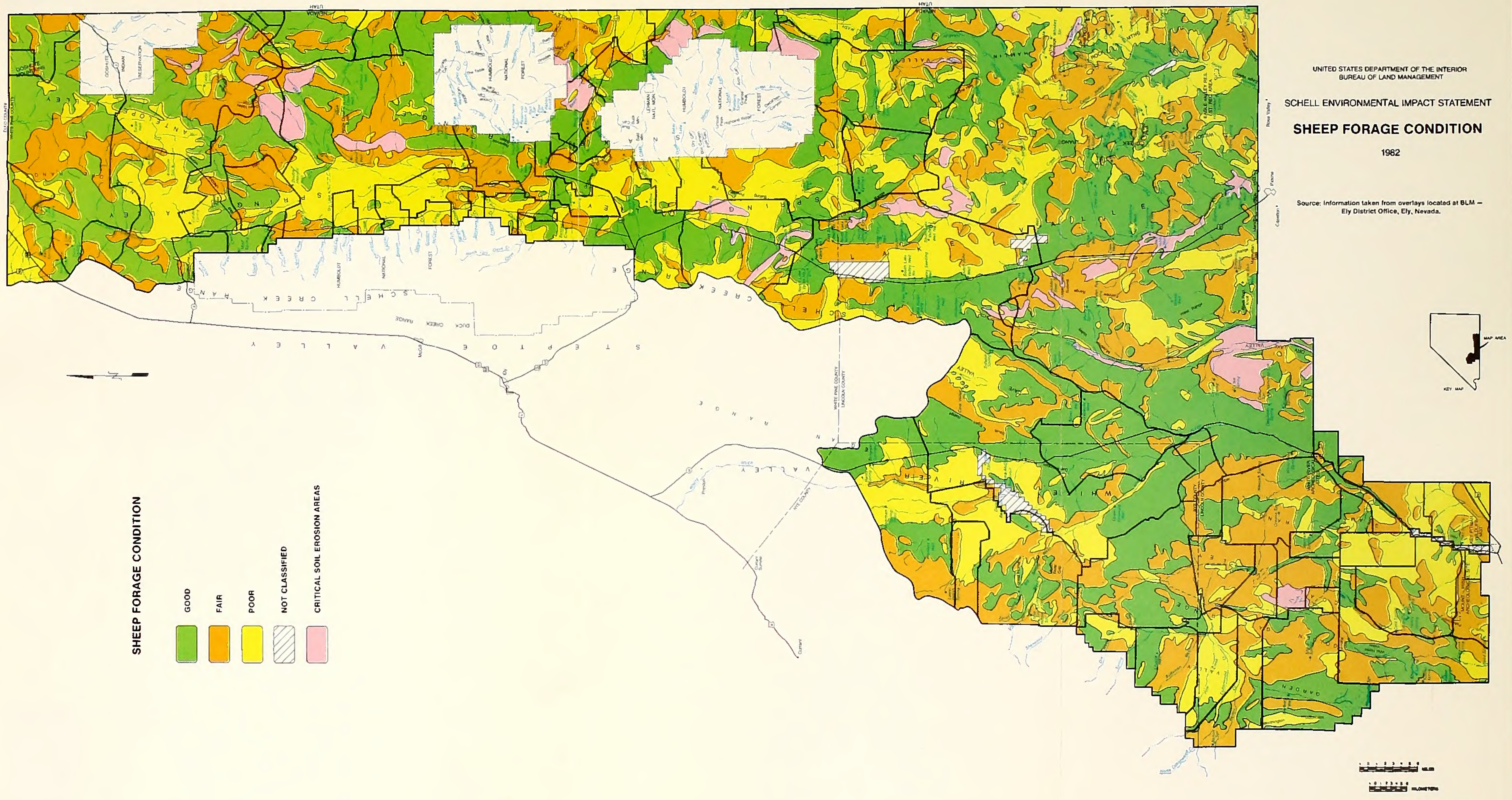
Source: Information taken from overlays located at BLM – Ely District Office, Ely, Nevada.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SCHELL ENVIRONMENTAL IMPACT STATEMENT

SHEEP FORAGE CONDITION

1982



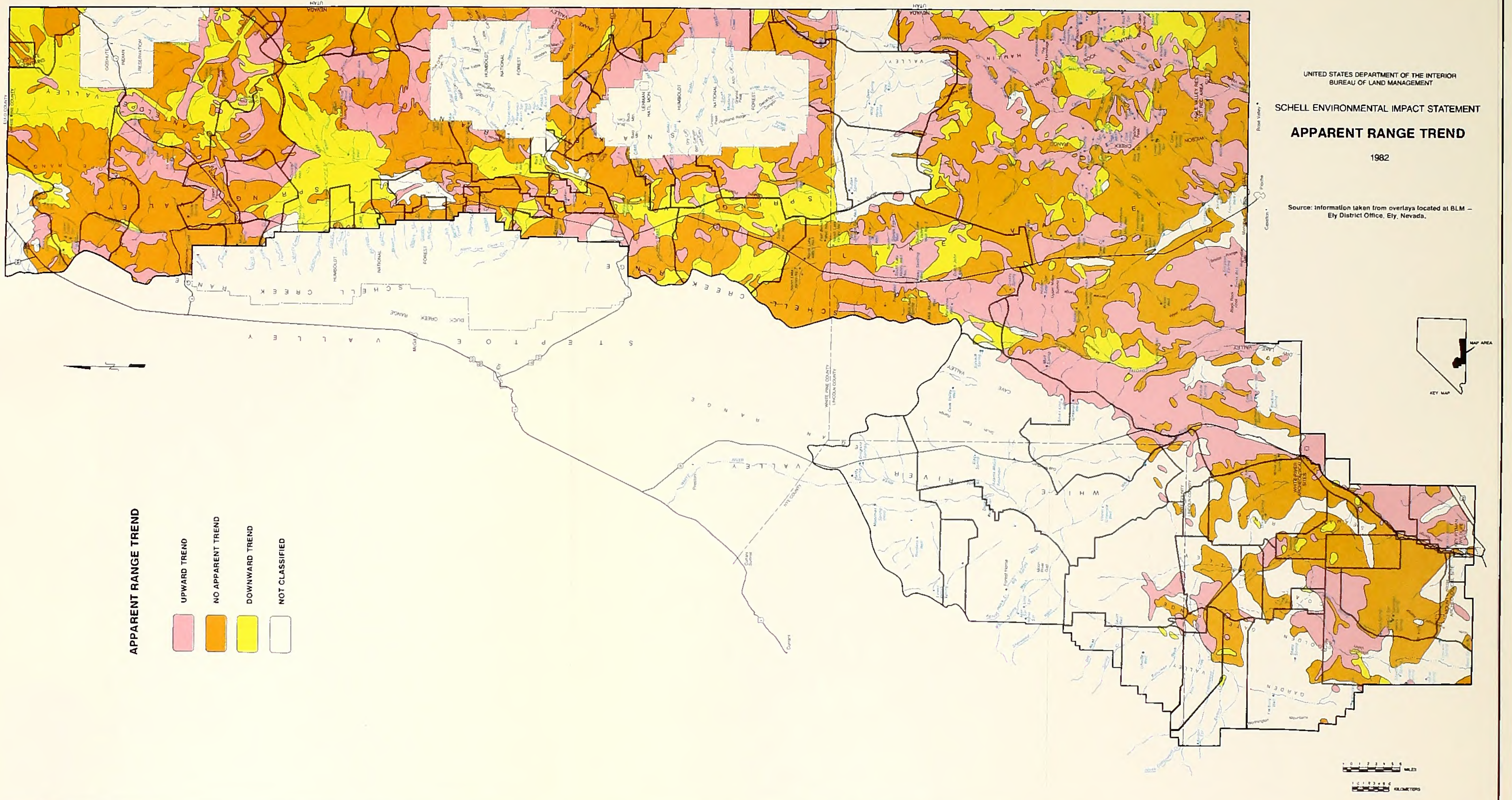
Source: Information taken from overlays located at BLM – Ely District Office, Ely, Nevada.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

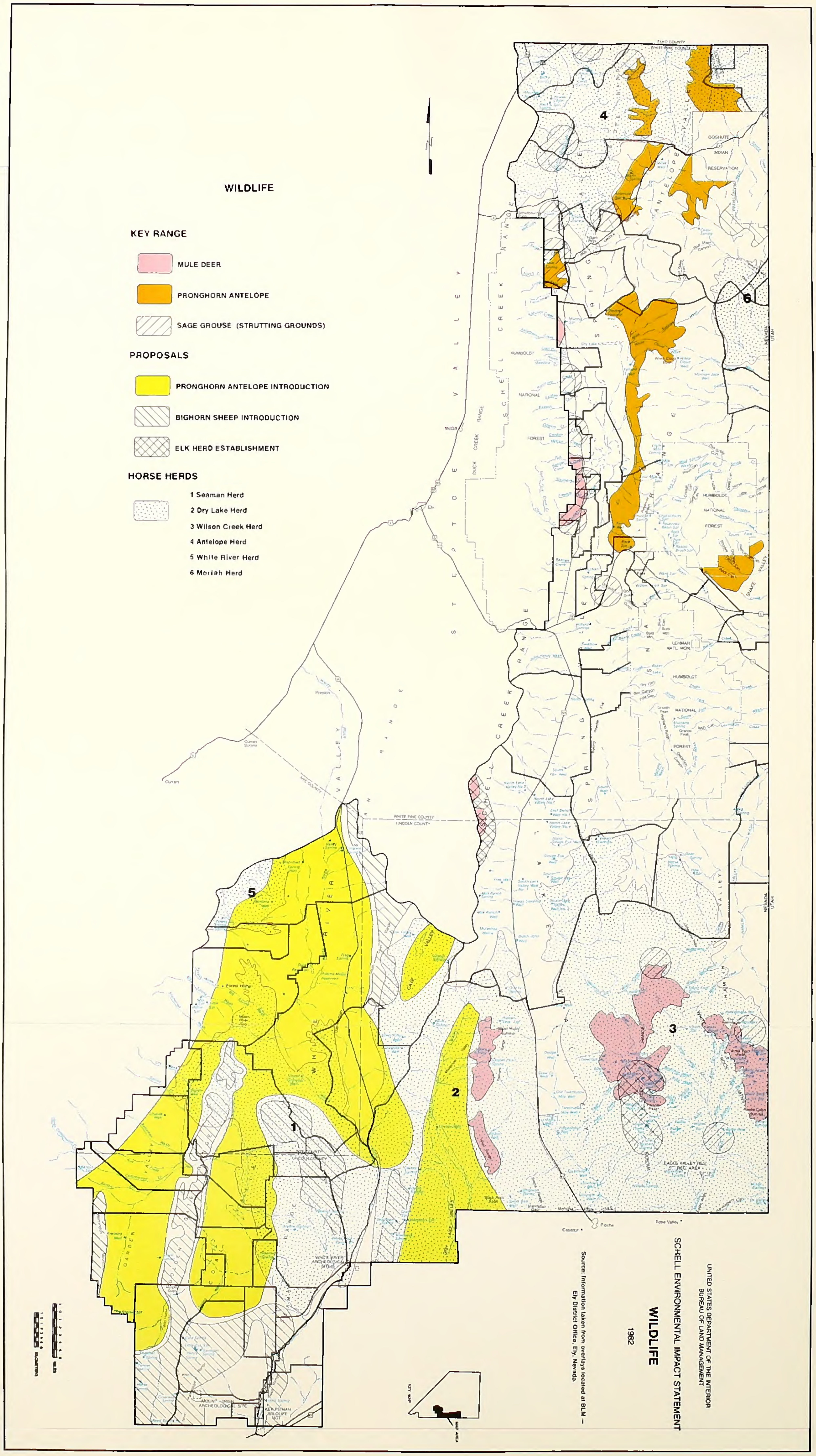
SCHELL ENVIRONMENTAL IMPACT STATEMENT

APPARENT RANGE TREND

1982



Source: Information taken from overlays located at BLM – Ely District Office, Ely, Nevada.



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SCHELL ENVIRONMENTAL IMPACT STATEMENT

WILDLIFE

1982

Source: Information taken from overlays located at BLM – Ely District Office, Ely, Nevada.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter evaluates, by discipline, the environmental consequences that would be expected from the implementation of each of the alternatives. Both adverse and beneficial impacts to the human environment are presented. Also included here are mitigating measures (not included under Standard Operating Procedures (SOP) of Chapter 1) needed to lessen adverse impacts. All adverse impacts not mitigated are unavoidable adverse impacts. Significance was determined by a variety of factors, primarily the severity and duration of the impact and the importance of the resource to humans. Importance was considered highest when laws, regulations, or other governmental decrees protected the resource to some degree. Irreversible or irretrievable commitments of resources are also summarized for each discipline when they occur. Actions committing future generations to continue a similar course are considered irreversible. Irretrievable is defined as irrecoverable, not retrievable; once used, not replaceable. The relationship between short-term uses of a resource to maintenance and enhancement of long-term productivity is discussed for vegetation.

It has been determined that none of the alternatives would significantly effect climate, topography, geology, minerals, or air quality. Therefore, these disciplines are not analyzed in this EIS.

BASIC ASSUMPTIONS

To facilitate the process of analyzing impacts of each alternative, the following basic assumptions were made.

1. Unless otherwise noted, all impacts identified in this chapter are direct impacts.

2. Since a BLM SOP prohibits modifications that would impair an area's suitability for wilderness, no impacts on potential wilderness should occur in any alternative.

3. The BLM will have the funding and work force to implement and supervise the selected alternative.

4. All baseline data are the best available. Only 69 percent of the Schell RA had been surveyed for apparent trend. Of the surveyed area, 33 percent was upward, 23 percent downward, and 44 percent had no apparent trend. For analysis purposes these percentages were extrapolated to the entire Schell RA.

5. Problem 1, improper utilization of the vegetation resource, is probably the major problem in the Schell RA, and, in fact, is a contributing factor to many of the other problems. The objective of grazing at a sustained yield level is part of all alternatives except No Action. At this point in time it is not known whether present grazing in the Schell RA is utilizing vegetation at a rate above, below, or near sustained yield. It is not known how much grazing use may need to be reduced or increased once utilization monitoring data becomes available. It is suspected that once utilization data are actually collected and analyzed, adjustments in livestock and wild horse use will range from about a 30 percent increase to a 50 percent decrease over past levels for the allotments in the Schell RA. Therefore, for analysis purposes in this EIS, it has been assumed that in each allotment with a utilization problem (Problem 1), a 10 percent decrease in present livestock licensed use and wild horse use would be required. These estimates were based on the professional judgements of the BLM and BIO/WEST, Inc.

6. For analysis purposes, grazing use adjustments were made in proportion to the present use by wild horses and livestock.

DETERMINATION OF SIGNIFICANT IMPACTS

The purpose of this section is to define the threshold used in each resource to identify significant impacts. When an environmental impact exceeds a threshold, that impact becomes significant. Impacts can be either adverse or beneficial, depending on how they alter the resource in question. In all disciplines, existing condition is the baseline that separates beneficial from adverse impacts. Maintaining the status quo results in no significant impacts. The following thresholds have been developed from previous Nevada grazing EISs and professional opinion of BLM and BIO/WEST resource specialists.

WATER RESOURCES

The threshold for water quality parameters would be exceeding Nevada Water Pollution Control Regulations of 1979 for Class B waters. These include 10 nephelometer turbidity units (NTUs) for turbidity and 200 per 100 ml of fecal coliform bacteria.

SOILS

Factors that would increase erosion (adverse impact) or decrease erosion (beneficial impact) from present conditions can be noted but not quantified. The threshold for significance will be when 10 percent or more of the Schell RA (424,000 ac) changes in erosion potential. This threshold was based on professional judgement.

VEGETATION

Thresholds are:

Vegetation trend and condition - A change in livestock forage condition or apparent trend in 5 percent or more of the Schell RA acreage (professional judgement).

Riparian and Wetland Vegetation - A change in livestock forage condition in 10 percent or more of the existing acreage (professional judgement).

LIVESTOCK GRAZING

The threshold of significance in livestock grazing is a 10 percent or greater change over existing levels (last 3-year average use). This was based on the Department of the Interior appropriation act for 1980 which set 10 percent as a limit for appealed reductions.

WILDLIFE

Thresholds are:

1. A change in condition in 10 percent or more of any herd use area or important habitat type for game and non-game species (professional judgement).

2. A 20 percent change in existing numbers in a herd use area for big game species (NDOW).

AQUATIC HABITAT

A change in the habitat condition of 10 percent (4.6 mi) or more of the fish stream miles (professional judgement).

WILD HORSES

The threshold for wild horses would be a change of 10 percent over present numbers by herd unit. This level was set to be commensurate with livestock reductions.

RECREATION

The threshold is a change of 10 percent or more in visitor days from the existing situation for any given activity.

CULTURAL RESOURCES

The threshold would be destruction of scientifically or educationally valuable sites.

PALEONTOLOGY

The threshold would be destruction of any scientifically valuable fossils.

ECONOMICS

No objective measure(s) of what represents a significant impact is available. Therefore, the following analysis assumes thresholds of:

a. A 5 percent change in net ranch income for any ranch size group (professional judgement)

b. A 5 percent change in the employment or sales of any sector would be significant (professional judgement).

SOCIAL CONDITIONS

Current relations among interest groups are characterized by controversy and conflict with regard to management of the Schell RA, and any decision by the BLM is likely to be perceived by some group(s) as having actual or potential significant impacts on their interests. Therefore, in this analysis the threshold level for significant impacts is defined as any change from the existing situation (professional judgement).

PROPOSED ACTION

WATER RESOURCES

It is not expected that surface or groundwater quantity would be affected by the Proposed Action. Water quality, especially fecal coliform and turbidity, are expected to vary dependent on the amount of livestock usage around streams and springs (Kunkle 1970). Fecal coliform and turbidity levels would remain at or near present levels in most streams because livestock use would change only slightly (10 percent) from present use. Cherry, Negro, and Silver creeks are expected to improve in these parameters since they will be fenced on public lands, keeping livestock away from the stream and improving bank stability. Total dissolved solids levels would continue to exceed Nevada water quality criteria since they are primarily the result of subsurface water movements through mineral-rich soils. Over the long term some decreases in TDS levels in streams are expected as watershed conditions improve and erosional processes are decreased.

SOILS

In the short term, reducing grazing to moderate utilization and improving grazing management would increase the effective ground cover, thus decreasing erosion. These projections reflect professional judgement based on the impacts projected for vegetation. In 235 ac of riparian vegetation, erosion would decrease since livestock use would be curtailed by fencing. Rangeland seedings would temporarily disturb 4,750 ac, and other rangeland developments would temporarily disturb an insignificant area of soil. Soil compaction and the removal of ground cover would temporarily increase erosion. As vegetation and litter increase, soil erosion should decline and become insignificant by the end of the short term in these areas. Therefore, erosion throughout the Schell RA would improve in the short term, especially in the 23 percent (982,000 ac) in a downward apparent trend and in 235 ac of riparian area that would be fenced. This would be a significant beneficial impact.

Management actions in the long term would be similar to those in the short term. Additional rangeland developments and the new policy regarding fire suppression would result in a temporary loss of vegetation cover and, thus, a temporary increase in soil ersoion. As vegetation and litter cover increase in these areas, soil erosion should decline. Due to lack of definition on the quantity, extent, and location of rangeland developments in the long term, a specific analysis cannot be conducted. In the worst case, these actions would have no significant impact to the soils of the Schell RA.

Short Term Use Versus Long Term Productivity

This alternative would favor long term productivity over short term use of the soil resource. Erosion would generally be reduced, aiding increased future production.

VEGETATION

Livestock Forage Condition and Apparent Trend

Licensing livestock use at the present level (average licensed use for the 3-year period 1977 to 1979), followed in 3 years by adjustments in livestock and wild horse use to achieve a sustained yield utilization level would have a beneficial effect on livestock forage condition and apparent trend. Grazing at a sustained yield level would allow most plants to complete growth cycles and increase carbohydrate reserves, thereby increasing vigor, reproduction, and composition in the community (Cook and Stoddart 1963, Frischnecht et al. 1953, Van Poolen and Lacey 1978).

Grazing systems, an important part of AMPs, are based on the assumptions that animals in large numbers result in a more uniform use of the forage and that a rest from grazing is beneficial to the plant, even though it must be grazed at a greater utilization level for a shorter time. Animals tend to overgraze certain areas of a range while other areas remain untouched. Because tender, more nutritious regrowth is more attractive than coarse, older material, animals tend to graze and regraze the same areas. Grazing systems force animals to make more uniform use of the forage. While complete agreement has not been reached on the latter assumption, research summarized by Shiflet and Heady (1971) and Hickey (1971) indicate that improved range condition and/or carrying capacity have been achieved from grazing systems. Grazing systems allow old plants to gain vigor and new plants to become established, and allow increased plant reproduction (Stoddart and Smith 1955). This would have a beneficial effect on livestock forage condition and apparent trend.

Water development and fencing (Table 1-1) would improve the distribution of livestock. Proper distribution of livestock is essential to effective use of the range (Cook 1967). As discussed above, uniform utilization of the range helps reduce areas of overgrazing. This would have a beneficial effect on livestock forage condition and apparent trend.

The exclusion of livestock from 9.8 mi (about 235 ac) of riparian stream habitat would allow plants to complete growth cycles with little or no grazing pressure. Studies in Nevada (Dahlem 1979) and Utah (Duff 1979) showed that a significant improvement in riparian vegetation can be achieved in a short period of time as a result of livestock exclusion.

These management actions would result in improved livestock forage condition and apparent trend throughout the Schell RA, especially in the 23 percent (982,000 ac) of the Schell RA in a downward apparent trend. Livestock forage condition and apparent trend would also be improved in 11 percent (235 ac) of the riparian vegetation, as a result of livestock exclusion, and 83 percent (9,700 ac) of the wetland vegetation, as a result of improved utilization and livestock distribution.

Fencing of riparian vegetation, as described in Chapter 2, would not only improve livestock forage condition and apparent trend, but would also allow extension of riparian vegetation into areas previously occupied by other vegetation types. Though this cannot be quantified, it would be a beneficial impact to riparian vegetation.

Therefore, short-term management actions of the Proposed Action would result in significant beneficial impact to the vegetation of the Schell RA.

Management actions in the long term would be similar to those of the short term: additional water sources would be developed and more fence would be constructed to improve livestock distribution; additional riparian and wetland vegetation would be protected from overuse; and an additional 9 AMPs and 10 grazing systems would be established. As previously discussed, improved livestock distribution and protection of riparian and wetland vegetation from overutilization would have a beneficial effect on livestock forage condition and apparent trend. Establishment of AMPs and grazing systems in allotments which would have been grazed at a sustained yield level for at least 7 years would have little, if any, beneficial effect on livestock forage condition and apparent trend.

In addition, a policy of allowing natural fires to burn on their own in many portions of the Schell RA would be implemented. Fire is harmful, to some degree, to almost all perennial vegetation; however, the severe effect it has on shrubby vegetation does not occur in herbaceous species because the perennial parts are below ground (Stoddart and Smith 1955). Sagebrush and nonsprouting juniper such as Utah juniper (*Juniperus utahensis*) are easily killed by fire. In the Snake River Plains of Idaho, Pechanek and Stewart (1944) found that forage production can be more than doubled by controlled burning followed by correct grazing. Based on this discussion, the policy of allowing natural fires to burn on their own would have a beneficial effect on livestock forage condition and apparent trend.

Therefore, long term management actions would result in improved livestock forage condition and apparent trend. Due to lack of definition on the quantity, extent, and location of these actions, a specific analysis cannot be conducted. In the worst case, these actions would have no significant impact to the vegetation of the Schell RA.

Short Term Use Versus Long Term Productivity

This alternative would favor the long term use and productivity of the vegetation resource since vigor, cover, and reproduction would be improved.

LIVESTOCK GRAZING

Initially, livestock use would be licensed at the present level (136,669 AUMs), a 48 percent reduction from grazing preference. After 3 years, sufficient monitoring data would be available to make livestock adjustments. For analysis purposes, it has been assumed that each allotment with a utilization problem (Problem Area 1, Table 1-2) would require a 10 percent decrease in present use. This would result in a 7,316 AUM reduction from present use in the Schell RA (Table 3-1).

Multiple use seedings would provide additional forage for livestock, wild horses, and big game. Based on the experience of the Schell RA area manager, a conservative estimate of the forage provided by multiple use seedings in the Schell RA would be 0.1 AUMs per ac. Therefore, 4,000 ac of multiple use seedings would provide 400 AUMs. Since 70 percent of the AUMs would be allocated to livestock, this would provide an additional 280 AUMs for livestock grazing (Table 3-1).

Water development would open up about 104,400 ac previously ungrazed due to distance from reliable water, providing an additional 3,367 AUMs for livestock grazing (Table 3-1).

Shiflet and Heady (1971) and Hickey (1971) summarized studies of grazing systems. They reported improved range condition or carrying capacity, or both, when grazing systems were used. As stated in the vegetation section, establishment of grazing systems and AMPs would result in improved livestock forage condition and apparent trend. As livestock forage condition and apparent trend progress upward, vegetation production would also increase (dependent on range site). Based on the cited references, the above discussion, and the professional judgement of the BLM and BIO/WEST, Inc., it is conservatively estimated that a 10 percent increase in present use would result from the additional forage provided by AMPs and grazing systems. This would provide an additional 5,679 AUMs for livestock grazing (Table 3-1).

Based on the above discussion, short term management actions would result in an increase from present use (136,669 AUMs) to 138,006 AUMs. An increase of 1,337 AUMs (about 1 percent of present use) would not be a significant impact to livestock grazing in the Schell RA.

Management actions in the long term would be similar to those of the short term. AMPs and grazing systems would provide forage for an additional 3,596 AUMs (Table 3-1), and seedings and water development would provide additional forage for livestock use. Due to lack of definition on the quantity, extent, and location of these actions, specific analysis cannot be conducted. In the worst case, these actions would have no significant impact to livestock grazing in the Schell RA.

WILDLIFE

Big Game

The 4,000 ac of multiple use seedings and 750 ac of wildlife seedings would provide 195 AUMs of forage for big game, most of which would be utilized by mule deer. The 195 AUMs is less than one percent of the forage needed to support reasonable numbers. The significance of this action would depend on the distribution of the seedings. If they were divided among the 8 allotments (Table 3-1), the benefits to each wildlife herd or population would be slight. If, however, they were all placed in one area with specific wildlife problems, such as summer deer range in the Wilson Creek or Chin Creek Allotments, the benefits to a single herd could be significant. As a result of these actions, it is estimated that the mule deer population would reach about 4,600 animals in the short term, an increase of about 65 deer.

Water developments would encourage the expansion of pronghorn antelope herds and allow mule deer to forage in areas adjacent to presently occupied ranges which traditionally lacked sufficient water. Livestock, however, would also use these areas and concentrate near water, discouraging use by wildlife. Those water developments which would be fenced would be most beneficial to big game. The cumulative impact of water developments would have a beneficial but insignificant impact to big game.

The installation of 71.9 mi of fence would have both beneficial and adverse impacts to big game. The improvement of livestock distribution and subsequent release of certain areas from overgrazing would reduce livestock/wildlife competition if the fences were strategically placed in the Chin Creek, Tippett, and Wilson Creek Allotments where deer summer range problems exist. However, fences would likely cause pronghorn antelope and deer mortality in the above allotments and in the Deep Creek Allotment. These allotments contain key winter range where both of these big game species concentrate and entanglement in fences could occur, especially with pronghorn antelope during severe winter storms (Spillett et al. 1967). Overall, the impacts from the additional fencing would not be significant.

The effects of intensive livestock management such as grazing systems and AMPs upon wildlife have not been studied extensively and the results of some studies are inconclusive (Mackie 1981). Skovlin et al. (1968) found that in Oregon, mule deer preferred sites of rotational grazing over sites of year-round grazing. Other studies reported little difference in forage plant selection and range use habits of mule deer on rest-rotational pastures as compared with continuously grazed range (Knowles 1975, Komberec 1976). Knowles (1976) found that mule deer distribution and movements appeared to be somewhat influenced by grazing treatments and fawn production and survival may be depressed on ranges where pastures are subject to heavy livestock grazing. The overall results of his study, however, are largely inconclusive with respect to the ultimate effects of rest-rotation grazing on mule deer.

In the Schell RA, it is anticipated that there would be an overall improvement in the quality and quantity of vegetation from the actions proposed in this alternative resulting in a significant beneficial impact to big game. There would, of course, be some adverse impact to both populations and habitat from intensive livestock management. Additional fences, as mentioned earlier, could result in big game mortality from entanglement, especially in key pronghorn antelope winter range in the Deep Creek, Chin Creek, Tippett, and Tippett Pass allotments. Season of use of certain pastures could have serious effects on the quantity and quality of forage on key ranges, such as winter and spring use areas (Deep Creek, Chin Creek, Tippett, Tippett Pass, and Wilson

Table 3-1. Initial livestock licensing levels and proposed management actions for the Proposed Action, Schell Resource Area (LS = livestock, WH - wild horses).

Allotment	Initial Licensed Use (AUMs)	Reductions due to Overutilization AUMs		SHORT TERM											LONG TERM			
				4000 ac. Seeding Multiple Use	2 Guzzlers	750 Acres WL Seeding 4.5 mi Fence	10 Springs, 10 mi Pipeline, and 2 mi Fence	71.9 mi. Fence	Stream Fence	15 mi. Fence Wetlands	A = AMP, G = Grazing System, E = Existing		Total AUMs		Increases Due to Intensive Management A = AMP, G = Grazing System		Total AUMs	
		LS	WH								LS	WH	LS	WH	LS	WH	LS	WH
Becky Springs	669	67	15	X			X	X			A 67	15	669+[a]	152			669+	152
Goshute Mtn.	417	42	4					X					375	32			375	32
Deep Creek	1,179	118	59	X				X			A 118	59	1,179+	591			1,179+	591
Chin Creek	2,766	227	141	X	X		X	X			A 277	141	2,766+	1,411			2,766+	1,411
Sampson Creek	796	80	12	X				X					716+	111			716+	111
Tippett	7,228	723	66	X	X		X	X			A 723	66	7,228+	655			7,228+	655
Tippett Pass	501										A 50	6	551	62			551	62
Red Hills	821												821				821	
Mill Spring	252												252		G 25		277	
Pleasant Valley	100	10											90				90	
Muncy Creek	5,929									X			5,929				5,929	
Indian George	2,573												2,573		G 257		2,830	
Meadow Creek	223												223		A 22		245	
Bassett Creek	296												296		A 30		326	
Devils Gate	695												695		G 69		764	
Taft Creek	711	71								X	G 71		711				711	
Smith Creek	3,428	343							X				3,085				3,085	
Stephens Creek	115	12								X			103				103	
Cleveland Ranch	696	70								X			626		G 70		696	
Negro Creek	2,357	236							X	X			2,121		G 236		2,357	
Bastian Creek	226												226		A 23		249	
D - X	227												227				227	
Sacramento Pass	401	40											361				361	
Strawberry Creek	345	35											310				310	
Baker Creek	2,910												2,910		G 291		3,201	

Table 3-1. Continued

		SHORT TERM													LONG TERM			
Allotment	Initial Licensed Use (AUMs)	Reductions due to Overutilization AUMs LS	Reductions due to Overutilization AUMs WH	4000 ac. Seeding Multiple Use	2 Guzzlers	750 Acres WL Seeding 4.5 mi Fence	10 Springs, 10 mi Pipeline, and 2 mi Fence	71.9 mi. Fence	Stream Fence	15 mi. Fence Wetlands	A = AMP, G = Grazing System, E = Existing LS	A = AMP, G = Grazing System, E = Existing WH	Total AUMs LS	Total AUMs WH	Increases Due to Intensive Management A = AMP, G = Grazing System LS	Increases Due to Intensive Management A = AMP, G = Grazing System WH	Total AUMs LS	Total AUMs WH
Majors	6,268												6,268				6,268	
Willard Creek	566	57											509		G 57		566	
Scotty Meadows	748	75											673		A 75		748	
Willow Springs	1,914					X			X				1,914				1,914	
S. Spring Valley	3,165										A 316		3,481	1			3,481	1
Chokecherry	1,748										A 175		1,923				1,923	
Cottonwood	2,345	235	24								A 235	24	2,345	239			2,345	239
Hamblin Valley	4,231	423	52								A 423	52	4,231	523			4,231	523
N. Chokecherry	364												364				364	
McCoy Creek	254												254		A 25		279	
Fox Mountain	2,301	230	4										2,071	35	G 230	4	2,301	39
Narrows	367												367				367	
Oreana Springs	2,369	237	5										2,132	48	G 237	5	2,369	53
Timber Mtn.	435												435	18			435	18
Irish Mtn.	1,458							X					1,458		G 146		1,604	
N. Hiko-Six Mile	463	46											417		G 46		463	
S. Hiko-Six Mile	617							X					617		G 62		679	
White River	96												96				96	
Forest Moon	2,030	203	4					X					1,827	35	A 203	4	2,030	39
Middle Coal Valley	1,060	106											954		G 106		1,060	
Pine Creek	2,057	206						X					1,851		A 205		2,056	
Bird Springs	420												420				420	
Coal Valley	604	60											544		G 60		604	
Cottonwood	1,229	123											1,106		A 123		1,229	
Needles	2,905												2,905	52			2,905	52

Table 3-1. Continued

				SHORT TERM											LONG TERM			
Allotment	Initial Licensed Use (AUMs)	Reductions due to Overutilization AUMs		4000 ac. Seeding Multiple Use	2 Guzzlers	750 Acres WL Seeding 4.5 mi Fence	10 Springs, 10 mi Pipeline, and 2 mi Fence	71.9 mi. Fence	Stream Fence	15 mi. Fence Wetlands	A = AMP, G = Grazing System, E = Existing		Total AUMs		Increases Due to Intensive Management A = AMP, G = Grazing System		Total AUMs	
		LS	WH								LS	WH	LS	WH	LS	WH	LS	WH
Wildhorse	158												158		G 16		174	
Batterman Wash	1,072	107						X	X				965		G 107		1,072	
Seaman Springs	554												554	35			554	35
W. Timber Mtn.	508												508				508	
Worthington Mtn.	3,845												3,845		G 385		4,230	
Hardy Springs	3,037	304						X			A 304		3,037				3,037	
Sunnyside	3,390	339	9					X			A 339	9	3,390	89			3,390	89
Dry Farm	644	64						X					580		G 64		644	
E. Water Gap	510	51											459		G 51		510	
W. Water Gap	230	23											207				207	
Crescent	465												465				465	
Reserved for Wildlife	-												-				-	
Uhalde Coal Valley	-												Combined with Worthington Mt.				-	
Pahroc	3,752	375											3,377		A 375		3,752	
Geyser Ranch	16,619					X							16,619	389			16,619	389
Grassy Mtn.	201	20											181	1			181	1
Wilson Creek	25,809	2,581	108	X		X	X	X			A 2,581	108	25,809+	1,079			25,809+	1,079
AUMs																		
Livestock	136,669	-7,989		+280	0	0	+3,367	+	0	0	+5,679		138,006		+3,596		141,602	
Wildlife				+120	+	+75	0	+	+	+	+		+					
Wild Horses			-503	0	0	0	0	0	0	0		+480	5,558	5,558		+13		5,571

[a]A+ means this allotment may receive AUMs as a result of the improvements indicated by an X.

Creek allotments), resulting in nutritional deficiencies and ultimately lower reproductive capacity. These adverse impacts would not be significant.

In problem 1 allotments, a 10 percent reduction in wild horse use and present livestock licensed use would not significantly benefit big game in areas where livestock/wildlife competition is severe, such as deer summer range in the Chin Creek and Wilson Creek allotments. It would have the effect of reducing the extent of competition but not in an amount that would be beneficial to big game. There may be isolated areas where a small reduction would be beneficial but in the Schell RA as a whole, the impact would be insignficant.

The long term impacts of the management actions would be similar to those discussed for the short term. Additional seedings would provide more forage for big game although the amount would not be sufficient for reasonable numbers. It is estimated that the mule deer population would reach about 4,700 animals in the long term as a result of management actions. Additional water developments would improve distribution of big game, especially pronghorn antelope, and allow more forage to become available for mule deer. It is expected that big game habitat would be improved in the allotments receiving AMPs and grazing systems, although the significance of the improvement cannot be predicted.

Allowing wild fires to burn may have a significant beneficial impact to the quality of big game habitat. Fires retard succession and produce suitable browse. Since mule deer prefer browse and midsuccessional seral stages, burning could increase the quantity and quality of their habitat.

In summary, there would be an overall improvement in big game habitat in the Schell RA as a result of the proposed action. It is suspected, however, that neither the short term nor long term actions would be adequate to alleviate problems with mule deer populations associated with summer range in the Chin Creek, Tippett, Pleasant Valley, and Wilson Creek allotments. As discussed in Chapter 2, these populations are at critically low levels and probably would remain so unless there is a significant decrease in livestock use.

The proposed action would have significant beneficial impacts to both elk and bighorn sheep if introductions were accomplished. The probability that introductions would occur is unknown.

Upland Game and Waterfowl

The removal of sagebrush prior to multiple use and wildlife seedings would have an adverse impact to sage grouse if placed within their habitat. Because sage grouse are so dependent upon sagebrush for their entire life cycle, removal would be detrimental. The severity of the impact would depend on the location and proximity to strutting grounds, since nesting areas are usually within 2 miles from them. Any impacts resulting from vegetation manipulation, however, could easily be mitigated through careful choice of the area to be manipulated.

Water developments would have a beneficial but unquantifiable impact to sage grouse. It would allow them to better utilize the available habitat and possibly aid in increasing the population.

The initiation of AMPs and grazing systems would have positive but unquantifiable beneficial impacts to both sage grouse and blue grouse through the improvement in the condition of meadows and an increase in herbaceous understory vegetation for food and cover (Oakleaf 1971). Most benefits would be realized in the Becky Springs, Chin Creek, Tippett, Tippett Pass, and Wilson Creek allotments.

The fencing of 9,700 ac of wetlands in Spring Valley would improve the wetland vegetation, but since grazing would still occur, only limited benefits to waterfowl would be realized. Studies on similar vegetation in riparian areas suggest even light or intensively managed grazing does not significantly improve wildlife habitat in those areas (Thomas et al. 1980).

The continued addition of water sources would be a beneficial but unquantifiable impact in the long term to all upland game. Positive benefits to blue grouse would be attained as more riparian areas are fenced and intensive livestock management is continued resulting in the improvement of meadows.

Nongame Wildlife

Nongame wildlife would benefit from water developments, fencing of wetlands and riparian areas, and any improvement in overall vegetation condition resulting from intensive livestock management. The herbaceous understory and overhead canopy cover of the rangelands would be allowed to develop with less grazing pressure resulting in a more complex vegetation structure and thus larger and more diverse wildlife populations. Since at least 23 percent of the Schell RA would improve, this would be a significant beneficial impact to nongame species in the Schell RA.

AQUATICS

A considerable amount of literature has been published during the last few years on the effects of grazing on western cold water streams (Platts 1978, Cope 1978, Van Velson 1978, Bowers et al. 1979, Platts 1981, Duff 1979). Almost all of the studies have shown that cattle and sheep grazing around streams have drastic effects on fishery habitat and fish populations. The general conclusion is that fencing out livestock is the only sure way to improve stream habitat, although stream habitat can be maintained in good to excellent condition with light grazing. These generalizations probably hold true for the Schell RA. Comments in the 1976 BLM stream survey concerning livestock damage indicated that light grazing on one stream (North Creek) due to rotational grazing maintained the stream in excellent quality. Most other streams were rated fair, primarily due to livestock damage.

Therefore, it has been assumed for analysis purposes, and because more detailed data are not available, that streams that are fenced will improve dramatically in habitat quality, streams that are in allotments with increased livestock use will degrade from present levels, and that streams in allotments with decreased grazing will remain in existing condition or improve slightly. Using these criteria for the Proposed Action, aquatic habitat in Cherry, Negro, and Silver creeks would improve dramatically in the short term due to fencing. This would be a significant beneficial impact. In the long term, these streams may all reach excellent condition. Five other streams (Cleve, Hampton, Pine (Ridge), Vipont, and Willard creeks) may benefit from decreased livestock use in the short term. Two streams (Big Spring and Siegel Creek) would degrade in habitat quality due to increased livestock use, a significant adverse impact. The other 28 streams in the Schell RA are not expected to change in habitat quality in the short term.

In the long term, increased livestock numbers are predicted, hence the potential for stream habitat degradation could increase. The increased potential for fencing, along with utilization at sustained yield levels and development of AMPs and grazing systems should alleviate many of the potential adverse problems. The chance for a significant beneficial impact is quite high as streams in the Schell RA should continue to improve.

Fish populations should increase in both the short and long term due to better habitat condition. Utah cutthroat populations in Pine (Ridge) and Hampton creeks may be slightly improved due to decreased livestock use. Other protected fishes would not be affected by the Proposed Action.

WILD HORSES

Under the Proposed Action, wild horse use in the Schell RA over the short term would decrease by 23 AUMs. Establishment of an AMP in the Tippett Pass Allotment would result in an additional 6 AUMs over those presently used by the horses in the Antelope Herd Unit. AUM reductions in Sampson Creek (-12) and Goshute Mountain (-4) to provide for sustained yield utilization would reduce the total by 10 AUMs for the herd unit, an insignificant impact.

A reduction of 13 AUMs in the short term for wild horses in the Fox Mountain (-4), Oreana Springs (-5), and Forest Moon (-4) allotments (problem 1 allotments) would also occur. Since Fox Mountain is shared by the Dry Lake and Seaman Herd Units, the herd unit which would lose the AUMs would have to be determined. The other 3 herd units (Wilson Creek, Moriah, and White River) would not change in wild horse use. Therefore, short term management actions would have an insignificant impact as far as wild horse population reductions are concerned. Since only 2 horses would need to be removed, it is doubtful roundups would be made.

Periodic roundups would be required to maintain present use levels. These roundups would use helicopters to herd the horses into winged traps. A mortality of 1-2 pecent during roundup and holding was noted during the most recent operations in the Ely District, and this level of mortality would be expected in future roundups.

In the long term, 13 AUMs would be added to either the Dry Lake or Seaman Herd Units, also an insignificant impact.

RECREATION

Initially, the fencing of streams could increase their fisheries and in turn fisherman numbers could increase. This would be an unquantifiable beneficial impact.

With full implementation, approximately 195 additional AUMs could be made available for big game. If wildlife numbers were able to increase to utilize these AUMs, hunting use of the Schell should increase. This increase in wildlife numbers would be about 65 deer which in turn could mean an additional 74 hunter days on the Schell RA if the number of hunters and hunter days remain at the present ratio to the number of deer. Since these people generally camp in the areas they hunt, the number of camping occasions would also increase. The same is true of off-road vehicle (ORV) use. These would all be insignificant beneficial impacts to recreation on the Schell RA.

CULTURAL RESOURCES

Due to incomplete cultural resources data for the Schell RA, it is impossible to predict the exact numbers and types of cultural resource sites which might be impacted as a result of implementation of any of the proposed alternatives for the grazing management program. It is possible, however, to note trends in cultural resource site deterioration which may be anticipated under each of the alternatives. In addition, most potential adverse impacts to historic and prehistoric sites will be avoided through adherence to the Standard Operating Procedures (SOP) outlined in Chapter 1 and to the conditions included in the Programmatic Memorandum of Agreement between the BLM and the Advisory Council on Historic Preservation (Appendix D). Therefore, no unavoidable adverse impacts are listed for any alternative.

Since cultural resource sites are situated on or just below the ground surface, they are highly susceptible to many forms of impact. Aside from vandalism (surface collecting of artifacts, defacement, or unauthorized excavation), considerable destruction may occur as a result of grazing (Roney 1977). Trampling by cattle, wild horses, and large-sized wildlife, as well as disturbances resulting from range development projects, cause potentially significant impacts to cultural resources. Overgrazing and reduction of vegetation also can result in accelerated erosion and deterioration of cultural resource sites.

The Proposed Action would produce little change in the present level of cultural resource impact due to grazing because livestock, wild horses, and wildlife numbers would not change much. The development of seedings, springs, pipelines, and fences where relocation is not possible could all potentially directly impact cultural resources. But since these areas are site specific, the completion of the required cultural resource surveys and data recovery or salvage prior to construction would result in quantitative and qualitative increases in cultural resource information necessary for both management and scientific needs. On the other hand, salvage of a cultural resource site also constitutes a significant adverse impact. Once excavated, a site is effectively destroyed and removed from future research considerations which may utilize different or new techniques of data recovery and analysis. A data gap in the history of an area could result as a consequence. Therefore, although salvage is a mitigation technique, it does not eliminate all of the adverse impacts.

ECONOMICS

The analysis of the economic impact on livestock producers in the Schell RA is based on the livestock budgets found in Chapter 2 (Table 2-13). All of the assumptions associated with those budgets, such as prices and percent calf crop, are assumed to hold throughout this chapter. It should be emphasized that the estimated economic impacts do not reflect any individual operation, but represent the average adjustments that might be expected. Individuals would likely experience effects that differ significantly from those estimated.

Linear programming models that were developed by Economic Research Service (USDA) personnel at Fort Collins, Colorado, were used to evaluate the impact of changes in the use of Schell RA lands on livestock operators in the area. Further detail concerning these models are found in the technical report by Godfrey and Keith (1982) and Gee (1981).

The aggregate adjustments for the area were estimated from an inputoutput model, provided by US Forest Service, Ogden, Utah. The area adjustments were based on the estimates outlined above for the affected ranchers. The report by Godfrey and Keith (1982) also outlines the details of this model and the procedures used to make these estimates.

Ranch Operations

In the short term, changes in AUMs would result from decreases due to overutilization, and increases due to water development, seedings, and intensive management (AMPs and grazing systems). Allotment specific changes are known for overutilization, AMPs and grazing systems, but allotment specific increases due to water development and seedings are not known as several allotments may get all or part of the developments. Therefore, an analysis of economic changes without these improvements was made, as well as an analysis including these improvements. This latter analysis was conducted so that each ranch size class received the maximum AUMs from the improvements. In other words, this analysis assumed that all the benefits went to a given size class if that size class was represented in the allotments potentially receiving the improvement. Therefore, it analyzes the maximum benefit any ranch size class could receive from this alternative in the short and long terms.

The Proposed Action without range improvements would decrease the number of AUMs available for livestock by about 2 percent in the short term--from 136,669 to 134,361. This would force ranchers to either decrease the size of their herds and/or purchase additional feed from other sources. The adjustments would not be uniform, however. For example, small cattle ranchers would be reduced 6.2 percent while medium ranches would be reduced 5 percent, large ranches less than one percent and sheep ranches 1.7 percent. These reductions would have differing impacts on rancher sales, incomes, and employment (Table 3-2). For example, medium-sized cattle operations would be affected about 2 percent in net income while large cattle operators would likely not be affected at all. It should be noted, however, that the proposed changes are minimal and not significant (less than a 5 percent change in net ranch income) for all sizes of operations. The proposed range improvements would alter this evaluation by the end of the short term if they were concentrated in particular allotments. However, it is not known which specific allotments would receive the improvements outlined in Table 3-1. Using the analysis described above, Table 3-3 shows the economic gains due to water developments and seedings being maximized by ranch size. The largest gains would be made if these improvements were put in allotments used by sheep operators, although the changes due to improvement are still not significant. The proposed developments would not create a positive short term benefit for small cattle ranches (Table 3-3).

The long term adjustments that would occur without improvements if the proposed action were implemented are outlined in Table 3-4. These adjustments are smaller than those estimated for the short term--only sheep operators would be affected more than 1 percent, an insignificant amount. Table 3-5 shows long term changes that include maximized benefits from the short term improvement (see above discussion). Sheep operators are the only ones potentially benefited to a significant degree (greater than 5 percent). Therefore, one must conclude that the proposed action would not have a significant impact on the incomes of ranchers using the Schell RA in the long or short terms, except for sheep operators in the long term if short term water and seeding developments are maximized on their allotments. In fact, yearly fluctuations in the amount of forage available are greater than the changes proposed.

It must be noted, however, that the proposed action could have a significant impact on the wealth position of ranchers using the area. The proposed action essentially represents a readjudication of grazing privileges. The proposed reductions in grazing preference would reduce the value of the permits and associated base property owned by these ranchers, even if actual use did not change significantly. Ranchers in the area were not able (or willing) to estimate the value of these permits because they were generally sold with cattle and/or land and no estimates of these wealth impacts are available at the present time. However, it is likely that these impacts could reduce the ability of some ranchers to obtain loans.

Regional

The regional impacts were generated using input-output models for the Lincoln and White Pine County region developed by the Region 4

Table 3-2. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Proposed Action, short term without water developments and seedings.

	Cattle							
	Small[a]		Medium[b]		Large[c]		Sheep	
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$53,413	-1.8	$102,539	-2.1	$330,229	0	$219,133	-0.6
Cash expenses	$26,825	-1.8	$ 45,366	-2.2	$176,969	0	$138,733	-0.6
Net cash income	$26,588	-1.8	$ 57,173	-2.1	$153,330	0	$ 80,400	-0.7
Net ranch income	$20,085	-2.1	$ 44,723	-2.4	$118,621	0	$ 60,312	-0.9
Number of cows/ewes	208	-1.9	403	-2.2	1,463	0	3,560	-0.6
Hours labor	2,016	-1.9	3,924	-2.1	8,601	0	12,624	-0.7

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

Table 3-3. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Proposed Action, short term with water developments and seedings.

	Cattle							
	Small[a]		Medium[b]		Large[c]		Sheep	
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$53,741	-1.2	$105,751	0.9	$332,389	0.6	$225,614	2.9
Cash expenses	$26,933	-1.2	$ 46,829	1.0	$178,051	0.6	$142,492	2.7
Net cash income	$26,588	-1.8	$ 58,921	0.9	$154,339	0.7	$ 83,123	3.3
Net ranch income	$20,085	-2.1	$ 46,336	1.1	$119,533	0.8	$ 62,950	4.3
Number of cows/ewes	208	-1.9	415	0.7	1,472	0.6	3,665	2.9
Hours labor	2,016	-1.9	4,046	0.9	8,655	0.6	12,998	2.9

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

Table 3-4. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Proposed Action, long term without water developments and seedings.

	Cattle							
	Small[a]		Medium[b]		Large[c]		Sheep	
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$54,383	0	$104,770	0	$330,452	0	$221,643	1.1
Cash expenses	$27,321	0	$ 46,383	0	$177,048	0	$140,189	1.0
Net cash income	$27,062	0	$ 58,388	0	$153,404	0	$ 81,454	1.2
Net ranch income	$20,518	0	$ 45,843	0	$118,688	0.1	$ 61,334	1.6
Number of cows/ewes	212	0	412	0	1,464	0.1	3,600	1.1
Hours labor	2,054	0	4,009	0	8,604	0	12,769	1.1

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

Table 3-5. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Proposed Action, long term with water developments and seedings.

	Cattle							
	Small[a]		Medium[b]		Large[c]		Sheep	
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$54,822	0.8	$108,027	3.1	$332,593	0.7	$229,338	4.6
Cash expenses	$27,561	0.9	$ 47,866	3.2	$178,156	0.7	$144,651	4.2
Net cash income	$27,291	0.8	$ 60,161	3.0	$154,437	0.7	$ 84,687	5.2
Net ranch income	$20,727	1.0	$ 47,480	3.6	$119,622	0.8	$ 64,464	6.8
Number of cows/ewes	214	0.9	424	2.9	1,473	0.7	3,725	4.6
Hours labor	2,071	0.8	4,132	3.1	8,660	0.7	13,212	4.6

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

office of the US Forest Service. Nye County was not used because the economic structure is significantly different and most ranchers using the Schell RA trade in Lincoln and White Pine counties. Changes in total gross sales were added to or deducted from export sales (final demand) because no significant livestock sales are made to other sectors within the 2-county region.

The changes in gross sales for each ranch size were multiplied by the number of ranches for each ranch size represented. The total aggregate change in sales, labor income, employment, and value added was estimated using the aggregate change in gross sales. Table 3-6 indicates these changes by alternative. Value added includes returns to owners labor and equity. Note that all calculations of changes in current regional activity will be overestimated since a part of the livestock effects would occur in Nye County, for which the livestock industry is a comparatively small sector. These changes include direct changes (in the livestock industry), indirect changes (in sectors serving the livestock industry), and induced changes (which result from changes in local household expenditures). This is called a Type II analysis.

The regional analysis that includes the effects of water and seeding development was run using data from the ranch class most benefited by maximizing these benefits. For example, in the Proposed Action, sheep operators were benefited the most in the short term (Table 3-3), therefore this ranch class was used for the Proposed Action regional analysis that included range improvements. A similar procedure was used for the analysis of all alternatives. Changes in the most affected sectors (of greater than one percent of total gross output) are listed in Table 3-7, along with the related percent of employment in that sector, by alternative.

The Proposed Action would result in the loss of 2 jobs (Table 3-6), an insignificant impact. It would have greatest impact on the livestock and food and feed grains industries, but still less than 5 percent (Table 3-7). Therefore, there are no significant short or long term impacts.

A change of about 75 hunter days could be expected in recreation activity in the area. This would be an insignificant increase in activity, and about a $4,500 increase in wholesale and retail trade—a much less than one percent increase in the general economy. Additionally, the local and nonlocal mix of hunter days is not known so that final demand change cannot be accurately predicted.

A projected total of $3.0 million increase in construction expenditures by the BLM under the Proposed Action is not included in the input-output analysis for 2 reasons: First, no exact schedule of expenditures is available. Second, there is no recent data on the use of local or outside contractors by the BLM. The bidding process for capital expenditures for range improvements prevents a specification of the existing local construction sector as the recipient of the increased demand. An average investment of $155,000 per year for 5 years would be needed for the proposed short term construction. This would be an annual increase of approximately one percent relative to current construction activity if all construction were done by local contractors. This would be a beneficial, but insignificant, impact. The longer term (20-year) annual construction expenditure is expected to be $155,000 also, still an insignificant increase in the sector activity.

No significant impacts on local tax revenues would be expected, since the significantly affected sectors make up very little of the total regional economic base.

SOCIAL CONDITIONS

The major social impacts of the proposals under the Proposed Action are summarized below. For a more detailed discussion of these potential impacts, see Krannich et al. (1982).

Ranching Community

The Proposed Action would have little overall impact, either positive or negative, on the psychological well-being, relationships with government, occupational outlook, satisfaction, and the standard of living of the local ranching community. Since the proposed management actions to increase available forage would be concentrated in a few allotments, some operators would benefit significantly while most would see no direct effect. This would be frustrating for the latter operators who, given the economic problems facing the ranching industry in Nevada, hope and expect the BLM to do more land treatments, fencing and water development.

Initial licensing at the 1977-1979 average licensed use level, which would have the effect of significantly lowering active preference levels, would not negatively impact most ranchers. In a majority of cases, licensed use has been relatively stable and ranchers are now grazing at their preferred levels. Ranchers perceive this proposal to be unfair to the few operators who had temporarily reduced herd size or who now need to increase the scale of their operations to attain a profit. Some ranchers suggested that there would be a significant political response to any attempt by the BLM to reduce levels without adequate data to support these decisions.

Anticipated short term reductions in licensed use in 35 allotments would meet with substantial opposition among local ranchers, who question the quality of monitoring data and the ability to establish an assessment of range trends over a short period of time. However, the subsequent implementation of range improvement programs allowing increased livestock grazing would result in positive long-term impacts for most ranchers.

Ranchers argue that riparian stream habitats have not changed in the last 30 years and they see no need to protect these habitats. Although there is a lack of support among ranchers for the proposal to allow wild horses to remain at present levels and to make proportional adjustments following monitoring, this proposal would have no new impacts on ranchers.

The development of AMPs on additional allot-

Table 3-6. Regional economic changes for alternative actions, Schell Resource Area.

	Change in Livestock Sector Export Sales	% Change in Livestock Export Sales	Regional Gross Output Changes	Change in Regional Hired Labor Income	Change in Total Value Added	Change in Employment
Proposed Action Short Term No Developments	-45,980	-.6	-94,254	-26,254	-33,162	2
Proposed Action[a] Short Term Maximized Developments	-13,575	-.2	-27,827	-7,786	-9,791	-.5
Proposed Action Long Term No Developments	13,696	+.2	28,075	7,855	9,878	+.5
Proposed Action Long Term Maximized Developments	52,171	.7	106,945	29,923	37,627	2
Resource Protection Short Term No Season of Use	-317,686	-4.3	-651,256	-182,212	-229,125	11.4
Resource Protection Short Term With Season of Use	-827,733	-11.2	-1,696,853	-474,755	-596,986	-29.8
Resource Protection Long Term No Season of Use	-247,819	-3.3	-508,029	-142,139	-178,734	-8.9
Resource Protection Long Term With Season of Use	-757,866	-10.2	-1,553,625	-434,682	-546,596	-27.3
Graze at Preference First 3 Years	7,692,457	103.7	15,769,537	4,412,059	5,547,999	280
Graze at Preference Short Term No Developments	-652,862	-8.8	-1,338,297	-374,453	-470,861	-23.8
Graze at Preference Short Term Maximize Developments	-418,160	-5.6	-857,183	-239,183	-301,588	-15.2
Graze at Preference Long Term	b	b	b	b	b	b
No Grazing	-1,698,454	-22.9	-3,481,831	-973,000	-1,226,000	-63.0

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[a] This row shows changes determined by maximizing range improvement benefits to that ranch size that would benefit the most.

[b] No estimate of changes because livestock numbers were not quantified.

Table 3-7. Percent of total gross output changes and percent change in sectoral employment, Schell Resource Area, by alternative.

	Livestock	Food and Feed Grain	F.I.R.E.	Services	Wholesale and Retail	Rail and Truck Transportation
% of Gross Output Change	78	8	3	2	2	1
Proposed Action Short Term No Developments	-1.57	-1.4	[a]	[a]	[a]	[a]
Proposed Action[a] Short Term Maximized Developments	[a]	[a]	[a]	[a]	[a]	[a]
Proposed Action Long Term No Developments	[a]	[a]	[a]	[a]	[a]	[a]
Proposed Action Long Term Maximized Developments	1.7	1.6	[a]	[a]	[a]	[a]
Resource Protection Short Term No Season of Use	-10.9	-9.5	[a]	[a]	[a]	[a]
Resource Protection Short Term With Season of Use	-28.3	-24.8	[a]	[a]	[a]	[a]
Resource Protection Long Term No Season of Use	-8.5	-7.4	[a]	[a]	[a]	[a]
Resource Protection Long Term With Season of Use	-27.0	-22.7	[a]	[a]	[a]	[a]
Graze at Preference First 3 Years	258	236	4.6	1.3	6.0	1.2
Graze at Preference Short Term No Developments	-22.9	-19.6	[a]	[a]	[a]	[a]
Graze at Preference Short Term Maximize Developments	-14.3	-12.5	[a]	[a]	[a]	[a]
Graze at Preference Long Term	[b]	[b]	[b]	[b]	[b]	[b]
No Grazing	-57	-52	1	[a]	1	[a]

[a] Less than 1%.

[b] No projected changes available due to no quantified livestock change.

ments would have significant beneficial impacts for the ranching community. The ranchers who at present are operating under AMPs claim that there has been a slow improvement in range condition over the last 8 to 10 years by using rest rotation strategies.

Local Community

Overall impacts of the Proposed Action on the local nonranching community would be minimal. Since the majority of those residents interviewed expressed strong support for the ranching industry and for management of public lands which enhances food and fiber production, some opposition to the proposed initial licensing restriction is to be anticipated. A majority of local residents appear to favor some immediate reduction in wild horse numbers and increased big game numbers and may therefore express dissatisfaction with the proposal to manage for current horse numbers and current big game populations.

Beyond the moderate dissatisfaction which may emerge in relation to these aspects of the Proposed Action, no significant impact on local lifestyle, interactional patterns, leadership structures, or community viability would be anticipated.

Regional and National

Overall reactions of key interest group representatives to the Proposed Action indicated that implementation of this alternative would be moderately beneficial to some groups and would have no significant negative impacts on others. In general, the various environmental protection, wildlife, wilderness, wild horse, and recreation interest groups share a common perception of deteriorating resource conditions throughout the Nevada BLM lands, including the Schell RA. At the same time, these groups espouse a need to avoid actions which would result in major disruptions of the local ranching community or the livestock industry. Overall reactions from representatives of the groups contacted suggest that the Proposed Action would be regarded as a viable compromise which would not over-prioritize any of the multiple uses of the area.

Representatives of groups interested in the protection of wild horses support proposals to maintain current proportions of livestock and horses if and when future grazing adjustments are made. Representatives of other groups mentioned only the limited attention to enhancement of wildlife and big game populations and improvement of riparian habitat as points of contention, but otherwise supported the types of changes expected to accompany the proposed action.

SUMMARY

The Proposed Action would meet the objective of Problem 1, improper utilization, by restricting forage use to sustained yield levels. Objectives for problems 2, 3, 4, and 5 (wildlife numbers, riparian-wetland condition, livestock use, and wild horses, respectively) would be only partially met, even in the long term. Numbers of big game and livestock would increase only slightly, and only about 2 percent of the riparian-wetland habitat would be improved significantly.

RESOURCE PROTECTION

WATER QUALITY

Water quality would improve under the Resource Protection alternative, particularly in the 12 streams which would be fenced. Decreased grazing would also benefit water quality but with present information the degree is not quantifiable. Since water quality is presently rather good in the Schell RA as a whole, it would remain that way and the improvement would not be significant.

SOILS

In the short term, reduction of livestock and wild horse use followed by moderate utilization and improved grazing management would increase the effective ground cover, thus decreasing erosion. These projections reflect professional judgement based on the impacts projected for vegetation. In 750 ac of riparian vegetation and 11,700 ac of wetland vegetation, soils would improve since livestock use would be eliminated. Rangeland seedings would temporarily disturb 3,400 ac and other rangeland developments (fencing) would temporarily disturb an insignificant area. As discussed under Proposed Action, soil erosion should decline and become insignificant by the end of the short term on these areas.

Therefore, short term management actions would improve soil erosion throughout the Schell RA, especially in the 23 percent (982,000 ac) of the Schell RA in a downward apparent trend, 750 ac of riparian vegetation and 11,700 ac of wetland vegetation. This would be a significant beneficial impact to the soils of the Schell RA.

Management actions in the long term would be similar to those in the short term. Additional rangeland developments and the new policy regarding fire suppression would result in a temporary loss of vegetation cover and, thus, a temporary increase in soil erosion. As vegetation and litter cover increase in these areas, soil erosion should decline. Due to lack of definition on the quantity, extent, and location of rangeland developments in the long term, a significant analysis cannot be conducted. In the worst case these actions would have no significant impact to the soils of the Schell RA.

Short Term Use Versus Long Term Productivity

This alternative would favor long term productivity over short term use of the soil resource. Erosion would generally be reduced, aiding increased future production.

VEGETATION

Livestock Forage Condition and Apparent Trend

Reducing wild horse use and licensed livestock use to levels that would provide forage for reasonable numbers of big game and big game introductions would reduce the grazing pressure in most allotments. Individual allotment reductions would be proportionate and would range from 0 to 100 percent of present livestock and wild horse use (Table 3-8). This would result in an overall 16 percent decrease from present livestock use and an overall 28 percent decrease from present wild horse use.

Table 3-8. Initial livestock licensing levels and proposed management actions for the Resource Protection Alternative in AUMs, Schell Resource Area (LS = livestock, WH = wild horses).

						SHORT TERM									LONG TERM			
	Present Use (AUMs)	Initial Reductions		Initial Use (AUMs)		Reductions Due to Over-utilization		3400 ac. Seeding	Stream and Wetlands Fence (12,450)	Wildlife Intro-ductions	Increases Due to Intensive Management A = AMP G = Grazing System E = Existing		Total AUMs		Increases Due to Intensive Management		Total AUMs	
Allotment		LS	WH	LS	WH	LS	WH				LS	WH	LS	WH	LS	WH	LS	WH
Becky Springs	669	56	13	613	139	67	15				A 67	15	613	139			613+[a]	139+
Goshute Mtn.	417			417	36	42	4						375	32			375+	32+
Deep Creek	1,179			1,179	591	118	59				A 118	59	1,179	591			1,179+	591+
Chin Creek	2,766	566	290	2,200	1,121	277	141				A 277	141	2,200	1,121			2,200+	1,121+
Sampson Creek	796	59	9	737	114	80	12						657	102			657+	102+
Tippett	7,228	4972	451	2,256	204	723	66			25	A 723	66	2,231	202			2,231+	202+
Tippett Pass	501	441	49	60	7						A 50	6	110	13			110+	13+
Red Hills	821	68		753									753				753+	
Mill Spring	252	252		0									0					
Pleasant Valley	100	10		90		10							80				80+	
Muncy Creek	5,929	1532		4,397					X				4,397				4,397+	
Indian George	2,573	170		2,403									2,403		G 257		2,660+	
Meadow Creek	223	29		194									194		A 22		216+	
Bassett Creek	296	17		279									279		A 30		309+	
Devils Gate	695	46		649									649		G 69		718+	
Taft Creek	711	155		556		71			X		G 71		556				556+	
Smith Creek	3,428	312		3,116		343							2,773				2,773+	
Stephens Creek	115	115		0					X				0				0+	
Cleveland Ranch	696	233		463		70			X				393		G 70		463+	
Negro Creek	2,357	83		2,274		236			X				2,038		G 236		2,274+	
Bastian Creek	226	7		219									219		A 23		242+	
D - X	227	199		28									28				28+	
Sacramento Pass	401	401		0									0				0+	
Strawberry Creek	345	228		117		35							82				82+	
Baker Creek	2,910	78		2,832									2,832		G 291		3,123+	

Table 3-8. Continued

Allotment	Present Use (AUMs)	Initial Reductions		Initial Use (AUMs)		SHORT TERM Reductions Due to Over-utilization		3400 ac. Seeding	Stream and Wetlands Fence (12,450)	Wildlife Intro-ductions	Increases Due to Intensive Management A = AMP G = Grazing System E = Existing		Total AUMs		LONG TERM Increases Due to Intensive Management		Total AUMs	
		LS	WH	LS	WH	LS	WH				LS	WH	LS	WH	LS	WH	LS	WH
Majors	6,268	444		5,824					X				5,824				5,824+	
Willard Creek	566	70		496		57			X				439		G 57		496+	
Scotty Meadows	748	42		706		75		X					631		A 75		706+	
Willow Springs	1,914	478		1,436									1,436				1,436+	
S. Spring Valley	3,165	67		3,098	1				X		A 316		3,414	1			3,414+	1+
Chokecherry	1,748	25		1,723					X		A 175		1,898				1,898+	
Cottonwood	2,345	101	10	2,244	229	235	24				A 235	24	2,244	229			2,244+	229+
Hamblin Valley	4,231	422	52	3,809	471	423	52				A 423	52	3,809	471			3,809+	471+
N. Chokecherry	364	7		357									357				357+	
McCoy Creek	254	44		210									210		A 25		235+	
Fox Mountain	2,301	68	1	2,233	38	230	4			41			1,963	33	G 230	4	2,193+	37+
Narrows	367			367									367				367+	
Oreana Springs	2,369	63	1	2,306	52	237	5			50			2,020	46	G 237	5	2,257+	51+
Timber Mtn.	435	8		427	18					34			394	17			394+	17+
Irish Mtn.	1,458	70		1,388						126			1,262		G 146		1,408+	
N. Hiko-Six Mile	463	13		450		46				20			384		G 46		430+	
S. Hiko-Six Mile	617	4		613						29			584		G 62		646+	
White River	96			96									96				96+	
Forest Moon	2,030	542	10	1,488	29	203	4			75			1,211	24	A 203	4	1,414+	28+
Middle Coal Valley	1,060	1		1,059		106				22			931		G 106		1,037+	
Pine Creek	2,057			2,057		206	1			29			,822		A 205		2,027+	
Bird Springs	420	11		409						20			389				389+	
Coal Valley	604			604		60				28			516		G 60		576+	
Cottonwood	1,229	123		1,106		123				49			934		A 123		1,057+	
Needles	2,905	16		2,889	52		2		161		,731	49			2,731+	49+		

Table 3-8. Continued

						SHORT TERM									LONG TERM			
											Increases Due to Intensive Management A = AMP G = Grazing System E = Existing							
	Present Use (AUMs)	Initial Reductions		Initial Use (AUMs)		Reductions Due to Over-utilization		3400 ac. Seeding	Stream and Wetlands Fence (12,450)	Wildlife Intro-ductions			Total AUMs		Increases Due to Intensive Management		Total AUMs	
Allotment		LS	WH	LS	WH	LS	WH				LS	WH	LS	WH	LS	WH	LS	WH
Wildhorse	158	34		124						38			86		G 16		102+	
Batterman Wash	1,072	120		952		107			X	24			821		G 107		928+	
Seaman Springs	554	15	1	539	34					10			530	33			530+	33+
W. Timber Mtn.	508	9		499						24			475				475+	
Worthington Mtn.	3,845	67		3,778						154			3,624		G 385		4,009+	
Hardy Springs	3,037	421		2,616		304				81	A 304		2,535				2,535+	
Sunnyside	3,390	284	7	3,106	82	339	9			261	A 339	9	2,852	75			2,852+	75+
Dry Farm	644	74		570		64				8			498		G 64		562+	
E. Water Gap	510	1		509		51				27			431		G 51		482+	
W. Water Gap	230	62		168		23				13			132				132+	
Crescent	465	74		391						120			271				271+	
Reserved for Wildlife	-			0						14								
Uhalde Coal Vall Valley	-			-														
Pahroc	3,752	10		3,742		375				10			3,357		A 375		3,732+	
Geyser Ranch	16,619	1352	32	15,267	357			X		187			15,084	353			15,084+	353+
Grassy Mtn.	201	21		180	1	20							160	1			160+	1
Wilson Creek	25,809	6964	291	18,845	788	2,581	108	X	X	769	A 2,581	108	18,107	757			18,107+	757+
AUMs - Livestock	136,669	-22156	0	114,513		-7,937		+327 1	0	-2,382	+5,679		110,200		3,571		113,771+	
Wildlife		+22156	+1217						0	+2449	0							
Wild Horse		0	-1217		4,364		+503	+13	0	-53		+480		4,302		13		4,315+

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[a] All allotments would probably have increased livestock and wild horse use in the long term, although it is not quantifiable.

Van Poolen and Lacey (1978) and Lacey and Van Poolen (1981) indicated that a reduction in grazing pressure from heavy to moderate and from moderate to ungrazed by livestock would increase herbage production by increasing species composition. Frischnecht et al. (1953) indicated that light grazing pressure can either maintain or increase the number of plants and future density. Based on these references, the reduction in grazing pressure would facilitate an increase in plant vigor and increase the present composition of forage plants. This would have a beneficial effect on livestock forage condition and apparent trend.

The period of rest is designed to allow old plants to gain vigor and new plants to become established, and to allow increased reproduction. It also allows plants to build up their carbohydrate reserves, a primary factor influencing plant vigor (Trlica et al. 1971). Grazing after the most important forage plants have set seed injures plants less and is believed to increase reproduction. Plants which are not grazed until after they have set seed (following a period of rest) produce greater quantities of seed. Plants which reproduce vegetatively show almost equal response to the period of rest. This would have a beneficial effect on livestock forage condition and apparent trend by increasing the percent composition of livestock forage species in plant communities.

After 3 years, sufficient monitoring data would be available to make livestock and wild horse adjustments to achieve a sustained yield utilization level while maintaining sufficient forage for reasonable numbers of big game. As previously discussed (under Proposed Action), this would result in improved livestock forage condition and apparent trend, especially in the 23 percent (982,000 ac) of the area in a downward trend. This would be a significant beneficial impact.

Stream improvement would result in improved livestock forage condition and apparent trend in 750 ac (35 percent) of the riparian vegetation. In addition, riparian vegetation would be allowed to extend into areas previously occupied by other vegetation types along 31.7 mi of streams. Fencing to exclude livestock grazing would result in improved livestock forage condition and apparent trend (as discussed under Proposed Action) in 11,700 ac (100 percent) of wetland vegetation. In addition, wetland vegetation would be allowed to expand into areas previously occupied by other vegetation types. Therefore, improved livestock forage condition and apparent trend and the extension of riparian and wetland vegetation would be a significant beneficial impact to riparian and wetland vegetation.

Long term management actions would be similar to those of the short term. Monitoring would provide data on which to base adjustments of grazing use to maintain a sustained yield utilization level. All unfenced riparian and wetland vegetation would be monitored and corrective actions taken if conditions deteriorate. An additional 9 AMPs and 19 grazing systems (Table 1-4) would be established. Also, a policy of allowing natural fires to burn on their own in many portions of the Schell RA would be implemented.

Based on the discussion under Proposed Action, long term management actions would result in improved livestock forage condition and apparent trend. In the worst case, the long term management actions would have no significant impact to the vegetation of the Schell RA.

Short Term Use Versus Long Term Productivity

This alternative would favor the long term productivity of the vegetative resource over short term use. Vegetation production would increase in both the short and long term.

LIVESTOCK GRAZING

Initially, livestock would be licensed at a level which would provide sufficient forage for reasonable numbers of big game (114,513 AUMs), a 16 percent (22,156 AUMs) reduction from present livestock use (Table 3-8). After 3 years, sufficient monitoring data would be available to make livestock adjustments to achieve sustained yield including those AUMs reserved for wildlife. These adjustments would result, as discussed under Proposed Action, in a 7,316 AUM reduction from present use in the Schell RA (Table 3-8). Additional forage would be provided by 3,400 ac of seedings (327 AUMs), and AMPs and grazing systems (5,679 AUMs) (Table 3-8). Calculations for AUMs were discussed under Proposed Action. This action would result in a change from present use from 136,669 AUMs to 122,031 AUMs, a decrease of 14,638 AUMs (about 11 percent of present use) which would be a significant adverse impact to livestock grazing in the Schell RA.

Management actions in the long term would be similar to those of the short term. AMPs and grazing systems would provide forage for an additional 3,596 AUMs (Table 3-8), and seedings would provide additional forage for livestock use. Additional forage for livestock would also be expected to accrue because the vegetative resource would improve in reproduction and vigor. Therefore, livestock AUMs should increase in the long term to the extent that they are within 10 percent of present numbers; therefore, no significant long term impact would occur.

WILDLIFE

Big Game

The reduction of livestock and wild horses, the seeding of 3,400 ac to provide additional forage on summer range, and the fencing of 750 ac of riparian areas would provide adequate forage for reasonable numbers of big game (i.e., 10,500 deer, 1,450 pronghorn antelope, and 50 elk), a significant beneficial impact. Since the NDOW suggests that habitat condition, especially overutilization of the vegetation on summer ranges outside the Schell Creek Mountains, is the primary factor in limiting mule deer populations (see Chapter 2, Wildlife), it is likely that deer would increase significantly and possibly reach reasonable numbers in the short term. Other factors, however, such as predation (White Pine County has the highest mountain lion population in Nevada), severe winters, drought, habitat losses, and unfavorable plant successional trends would also influence deer populations and could conceivably hold them below reasonable numbers.

Although pronghorn antelope are at or near reasonable numbers, the proposed management actions would assure that conditions are favorable for continued maintenance of viable populations. There are insufficient data to aid in predicting the reaction of the elk to the proposed management actions; however, there would be a potential for increase.

Pronghorn antelope, elk, and bighorn sheep populations would be expanded through introduction into historic range. Management would be used to assure that livestock do not conflict with the introduced herds, for instance, disallowing replacement of cattle by domestic sheep in bighorn sheep introduction areas.

In summary, all of the short term management actions designed to help wildlife would result in significant improvement in wildlife habitat conditions and increasing numbers of wildlife. The use of monitoring to maintain adequate forage and other important aspects of big game habitat would help sustain reasonable numbers in the long term.

Upland Game and Waterfowl

The reduction of livestock grazing and subsequent improvement in vegetation throughout the Schell RA would improve upland game habitat condition in both the short and long term. The condition of meadows would improve significantly, providing much needed food for the young of upland game. In addition, the overall diversity of plant species would increase resulting in a higher quantity and quality of food.

The fencing of 31.7 mi of riparian vegetation would be a significant beneficial impact to all upland game species. Adequate cover would be allowed to develop and there would be a substantial increase in available food supplies.

There would be an immediate beneficial impact to waterfowl resulting from fencing 11,700 ac of wetlands. Food and cover plants would be allowed to develop fully and nest trampling would be eliminated. Perhaps the most substantial benefit would be the return of the hardstem bulrush from the present 8 to 10 in stubble to its natural height of 6 to 8 ft, thus providing excellent food and cover.

These actions would improve habitat for upland game throughout the Schell RA, a significant beneficial impact. Populations of these species would probably also increase in response to the improved habitat, but it is not known if the increase would be significant.

Nongame Wildlife

Small nongame birds and mammals would benefit greatly from the activities of this alternative in both the short and long term. The number of species present and their population size is dependent upon a complex vegetation structure of both understory and upper canopy cover. All vegetation communities would show a marked improvement in these aspects from overall better livestock management and range improvement. The most significant beneficial impact would be the recovery of the wetlands, meadows, aspen stands, and riparian areas as grazing is excluded. These areas, although making up a very small percentage of the total Schell RA, are, by far, the most important in supporting the populations and species diversity of nongame wildlife. An indirect benefit would be an improved prey base for predators in terms of both variety and numbers. This improvement in habitat quality would result in a significant beneficial impact to nongame wildlife, including predators.

AQUATICS

The fencing or other habitat improvement of 31.7 mi of streams on the Schell RA in the short term would protect 11 of the 26 fish streams, a significant beneficial impact. The other streams would either maintain present habitat quality or slightly improve due to decreased livestock use. It is expected that trout populations would increase due to the improved habitat. In the long term, all streams would probably be improved to good or excellent condition because any stream in worse condition would be fenced.

WILD HORSES

Initially, wild horse use would be reduced by 1,217 AUMs to provide for forage for reasonable numbers of wildlife. This would require the removal of 68 horses from the Antelope Herd--a 27 percent reduction. Reductions from other herd units cannot be accurately defined because of overlap in allotments within herd units (Wilson Creek allotment is in both the Wilson Creek and Seaman Herd Units, Fox Mountain allotment is in both the Dry Lake and Seaman Herd Units). Another 34 wild horses would be removed from the Wilson Creek, Dry Lake, and Seaman herds in total. These reductions may be significant (more than a 20 percent change) in the Wilson Creek or Dry Lake herds. Following the availability of monitoring data, additional reductions of wild horses would be required on Problem 1 allotments, but these reductions would be offset by increases in forage by the end of the short term due to AMP and grazing systems. Therefore, only an insignificant further reduction of 23 AUMs would be required in the remainder of the short term.

During roundups to remove these horses, mortality is expected. The actual level of mortality is not known, but the Ely District of the BLM observed a 1 to 2 percent loss in their most recent operations. If that level of mortality is assumed, about 1 to 2 wild horses would die during capture and holding activities.

In the long term, a few (13) additional AUMs would be available for wild horses due to AMPs and grazing systems. Other forage may also be available due to improved reproduction, vigor, and growth due to sustained yield utilization, and the probable improvement in available forage due to reserving forage for wildlife. Wild horses would receive a proportionate share of any increase but it is doubtful any herd unit would enlarge by 20 percent, therefore changes would not be significant.

RECREATION

The protection of streams through fencing would increase the potential fishing opportunities in the Schell RA. It is doubtful this would be a significant increase in fishing use. Mule deer numbers would be expected to rise from about 4,500 to 10,500 (which are considered reasonable numbers). If the number of hunters and hunter days remain at the present ratio to the number of deer on the Schell RA, there would be an increase of about 7,000 hunter days. With an increase in deer hunters would come an increase in camping and ORV activity. Hunting for pronghorn, bighorn sheep, perhaps elk, upland game, and waterfowl would also be expected to increase once populations have become established, although the actual increase is unquantifiable. Therefore, increases in hunter days would be a significant beneficial impact.

CULTURAL RESOURCES

Reductions in livestock numbers in this alternative would reduce the chance for cultural resource damage from trampling or rubbing from that at present. Reduced erosion caused by decreased livestock grazing would also decrease the potential for damage. Site specific impacts due to seedings and fence construction would be mitigated by the SOP. Therefore, this alternative would generally be less adverse to cultural resources than the other alternatives, except No Grazing.

In the long term, increases in livestock numbers are predicted over short term levels, increasing the potential for adverse impacts, but conditions would probably still be better than at present.

ECONOMICS

Ranch Operations

Table 3-9 shows short term ranch budget changes which include net changes in livestock use (reductions and increases from Table 3-8) but without a period of rest imposed. Small and medium sized cattle operators are significantly reduced in net cash income (6 and 8 percent, respectively). Table 3-10 shows what impact adding the period of rest has on these budgets. All ranch sizes show significant decreases in net cash income, with medium sized cattle operations showing the greatest decrease (21 percent) and large cattle operations the least. Most ranch classes would not be able to cover interest expenses and many would go out of business.

In the long term, similar impacts would occur (Tables 3-11 and 3-12); the period of rest creates a significant reduction in income to all ranch classes except sheep operations. Medium sized cattle operations are affected the most again. Therefore, this alternative would have significant impacts to ranchers in both the short and long terms.

Regional Economics

The only significant short term adverse economic impacts of this alternative occur in the livestock and food and feed grains sectors (see Tables 3-6 and 3-7). Employment would decrease 11 percent without a period of rest and 28 percent with a period of rest in the livestock sector. In the food and feed grain sector, employment would decrease 10 percent without a period of rest and 25 percent with a period of rest. Significant reductions in wholesale and retail sales would also occur with a period of rest (Table 3-6).

In the long term, significant impacts to employment in the livestock and food and feed grain sector would be significant with or without a period of rest, and in wholesale and retail sales with a period of rest. This would be a significant adverse impact.

Increases in recreation activity of 7,000 hunter days is also projected. This is a 16 percent increase in this recreation activity, and an increase of about $410,000 in wholesale and retail trade--less than 5 percent of regional wholesale and retail sales. Since the local and nonlocal mix of hunter days is unknown, the net increase in local final demand is unknown.

Construction activity would amount to $625,000, or an annual average of $125,000 for 5 years--less than 2 percent of the current activity in the construction sector. Long term construction is projected to be $125,000 per year which is not significant.

SOCIAL CONDITIONS

Ranching Community

The impacts under this alternative would be significantly adverse to ranchers both initially and after full implementation. The ranchers interviewed indicated that on the average a 25 percent reduction in AUMs would exceed the critical threshold for maintaining a feasible operation. According to this proposal, licensed use initially would be cut more than 25 percent on about one-fifth of the allotments and 10 to 25 percent on another one-fifth of the allotments. Additional adverse impacts would be created by changes in periods of use. Most ranchers have little private land, and would probably be forced to reduce the size of their herds under the conditions of a 2-month period of rest. For many who remain in ranching, adjustment to the reduced grazing levels and the period-of-use restrictions would be difficult. Their material welfare would be severely impacted via reduced property values, increased difficulty obtaining loans and less income. These changes would adversely affect their overall psychological and social well-being. A few ranchers would go out of business and be subjected to the stresses of changing lifestyles, occupations, and places of residence.

The proposals under this alternative would also generate further controversy, misunderstanding, and conflict between the ranchers and the BLM. Several ranchers interviewed gave unprompted comments indicating they would not accept major reductions or shifts to a greater emphasis on nonlivestock uses. The ranching community is mobilized and highly committed to use their political influence and legal avenues to protect its interests and avoid losses.

Local Community

Implementation of the Resource Protection Alternative would probably result in decreases in the viability and stability of the local commun-

Table 3-9. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Resource Protection Alternative, short term, without a period of rest.

	Cattle							
	Small[a]		Medium[b]		Large[c]		Sheep	
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$51,335	-5.6	$96,100	-8.3	$319,000	-3.4	$215,983	-2.3
Cash expenses	$25,763	-5.7	$42,432	-8.5	$171,122	-3.3	$135,933	-2.1
Net cash income	$25,572	-5.5	$53,668	-8.0	$147,878	-3.6	$ 78,374	-2.6
Net ranch income	$19,156	-6.6	$41,488	-9.5	$113,694	-4.2	$ 58,350	-3.3
Number of cows/ewes	200	-5.6	377	-8.5	1,413	-3.4	3,481	-2.3
Hours labor	1,937	-5.7	3,677	-8.3	8,306	-3.4	12,347	-2.3

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

Table 3-10. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Resource Protection Alternative, short term, with a period of rest.

	Cattle							
	Small[a]		Medium[b]		Large[c]		Sheep	
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$46,102	-15.2	$77,706	-25.8	$304,846	-7.7	$206,588	-5.8
Cash expenses	$22,882	-16.2	$34,310	-26.0	$163,478	-7.6	$131,517	-5.3
Net cash income	$24,039	-11.2	$46,202	-20.9	$143,263	-6.6	$ 75,071	-6.7
Net ranch income	$17,845	-13.0	$34,796	-24.1	$109,737	-7.5	$ 55,150	-8.6
Number of cows/ewes	189	-10.8	305	-26.0	1,350	-7.7	3,355	-5.8
Hours labor	1,738	-15.4	2,972	-25.9	7,938	-7.7	11,903	-5.8

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

Table 3-11. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Resource Protection Alternative, long term, without a period of rest.

	Cattle						Sheep	
	Small[a]		Medium[b]		Large[c]			
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$52,419	-3.6	$98,372	-6.1	$319,230	-3.4	$218,002	-0.6
Cash expenses	$26,317	-3.7	$43,372	-6.5	$171,241	-3.2	$138,077	-0.5
Net cash income	$26,102	-3.6	$54,904	-6.0	$147,989	-3.5	$ 79,923	-0.7
Net ranch income	$19,614	-4.4	$42,629	-7.0	$113,794	-4.1	$ 59,853	-0.9
Number of cows/ewes	204	-3.8	386	-6.3	1,414	-3.3	3,541	-0.6
Hours labor	1,978	-3.7	3,764	-6.1	8,312	-3.4	12,559	-0.6

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

Table 3-12. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Resource Protection Alternative, long term, with a period of rest.

	Cattle						Sheep	
	Small[a]		Medium[b]		Large[c]			
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$47,186	-13.2	$79,978	-23.7	$305,076	-7.6	$210,283	-4.1
Cash expenses	$23,436	-14.2	$35,250	-24.0	$163,597	-7.6	$133,661	-3.7
Net cash income	$24,569	-9.2	$46,671	-20.1	$143,374	-6.5	$ 76,622	-4.8
Net ranch income	$18,303	-10.8	$35,937	-21.6	$109,837	-7.4	$ 56,653	-6.2
Number of cows/ewes	193	-9.0	314	-23.8	1,351	-7.7	3,415	-4.1
Hours labor	1,779	-13.4	3,059	-23.7	7,944	-7.6	12,115	-4.1

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

ity, with lifestyle changes, alterations of long-standing friendship, and interactional patterns, and a loss of community leadership accompanying reduced ranching activity and the possible emigration of some ranchers. Although the proposed reduction in AUMs assigned to wild horses is consistent with local priorities, local preferences for protection of ranching interests and a prioritization of food and fiber production on the public lands would clash with changes anticipated under this alternative, intensifying dissatisfaction and conflict with BLM. Overall, these changes would result in adverse, though nonquantifiable, social impacts on the local community.

Regional and National

Representatives of two groups primarily concerned with the protection of wild horses expressed general support for this alternative, with the reservations that adequate data must be available to justify the proposed wild horse reductions. A third individual representing a group interested in the protection of horses and all other animal species indicated opposition to any forced decreases in horse numbers, as well as concern about the negative effects of the alternative on some ranchers.

Other groups concerned with wildlife, recreation, wilderness, and environmental protection expressed positions indicative of strong support for the actions included in this alternative. Decreases in livestock grazing and wild horse numbers, along with increased wildlife AUMs and general resource base improvement would enhance opportunities for members of these groups to enjoy and utilize the area, while reducing conflicts with BLM. For these groups, the overall impact of this alternative would be significant and beneficial.

SUMMARY

The Resource Protection Alternative would meet the objectives of problems 1 and 2 (overutilization and wildlife numbers, respectively) in the short term. Problem 3 (riparian-wetland condition) would be more than 95 percent met in the short term, and fully met in the long term. Problems 4 and 5 (livestock and wild horse use, respectively) would not be met in either the long or short term.

GRAZE AT PREFERENCE

This alternative has major changes within the short term in livestock numbers, based primarily on projections of available forage and required management actions. Since impacts in all other disciplines depend on these vegetation and livestock changes, the order of the following discussion has been changed from that found in other alternatives. Vegetation is presented first, followed by Livestock Grazing, and then the other disciplines in order.

VEGETATION

Livestock Forage and Apparent Trend

Licensing livestock grazing at grazing preference, or greater if present use is greater than preference, would result in a temporary adverse impact to livestock forage condition and apparent trend throughout most of the Schell RA. For analysis purposes, allotments will be discussed in groups based on the percent of grazing preference presently used.

Six allotments (332,213 ac) are presently grazed at 90 percent of grazing preference, or greater (Table 3-13 and Table 1-2). Geyser Ranch is being grazed at 137 percent of preference. Increasing licensed use to grazing preference in 5 allotments and leaving Geyser Ranch at present use would increase grazing pressure. After 3 years, sufficient monitoring data would be available to make livestock adjustments to achieve a sustained yield utilization level. For analysis purposes, it has been assumed that grazing use would be reduced to the present level in all allotments, with an additional reduction of 10 percent of present use in allotments with a utilization problem (4 of the 6 allotments, Table 1-2). Of the 6 allotments, 3 would have had wild horses removed within the first 3 years, thus providing an additional 426 AUMs. This would offset the reductions due to utilization and result in a 52-AUM increase over present use. During the remainder of the short term, an additional 569 AUMs would become available due to AMPs and grazing systems in 3 of the 6 allotments, resulting in a net increase of 621 AUMs over present use in the short term. Livestock forage condition and apparent trend would decrease somewhat in the first 3 years. Grazing at a sustained yield utilization level, implementation of AMPs and grazing systems, and fencing to control livestock distribution would result in improved livestock forage condition and apparent trend by the end of the short term.

Eighteen allotments (Table 3-13) (617,384 ac) are presently grazed at 60 to 89 percent of grazing preference (Table 1-2). In these allotments, grazing at preference would significantly increase the grazing pressure. Three years of heavy utilization would reduce vigor, reproduction, and productivity of forage plants (Cook and Stoddart 1963, Stoddart 1946, Lang and Barnes 1942, Hansen and Stoddart 1940, Ellett and Carrier 1915) and livestock forage condition and apparent trend would decline from present levels. After 3 years, sufficient monitoring data would be available to make livestock adjustments, and reductions would be required to improve livestock forage condition and apparent trend. It is not known how much grazing use may need to be reduced once monitoring data becomes available. It is suspected that adjustments would range from about a 10 percent reduction to complete removal of livestock for a full year to reverse the decline and improve livestock forage condition and apparent trend. Therefore, for analysis purposes, it has been assumed that a 50 percent reduction from present use would be implemented for the duration of the short term on all allotments in this group (Table 3-13). In addition, 10 of these allotments are problem area 1 allotments which are assumed to require an additional 10 percent reduction (1,624 AUMs) from present use to achieve a sustained yield utilization level (Table 1-2).

Wild horse removal in 3 of the 18 allotments would provide an additional 696 AUMs that would

Table 3-13. Initial livestock licensing levels and proposed management actions for the Graze at Preference Alternative, Schell Resource Area (figures in AUMs).

Allotment	Present Livestock Use	Initial Livestock Use	Reductions Due to Overutilization	Horse Removal	Increases Due to Intensive Management A = AMP G = Grazing Systems	Seed 2000 ac Is Use	Seed 475 ac Multiple Use	Fence 84 mi	Pipeline 15 mi Springs (15) Wells (6) Reservoirs (2)	Short Term
90% of Preference or Greater										
Goshute Mtn.	417	465	42	36						411
Indian George	2,573	2,860		-	A 257					2,830
Middle Coal Valley	1,060	1,138	106	-	G 106					1,060
Pine Creek	2,057	2,207	206		A 20			X		2,057
Geyser Ranch	16,619	16,619		389						17,008
Grassy Mtn.	201	201	20	1						182
60-89% of Preference										
Deep Creek	1,179	1,722	118	591						1,062
Mill Spring	252	418		-	G 25			X		151
Smith Creek	3,428	3,989	343						P W S R	1,371
Cleveland Ranch	696	1,021	70		G 70					348
Negro Creek	2,357	3,727	236		G 236					1,179
D - X	227	277								113
Baker Creek	2,910	4,313			G 291				S	1,746
Scotty Meadows	748	1,227	75		G 75					374
Narrows	367	535		-						184
Oreana Springs	2,369	3,433	237	53	G 237			X		1,237
N. Hiko-Six Mile	463	543	46	-	G 46			X		232
S. Hiko-Six Mile	617	858			G 62					371
Coal Valley	604	848	60	-	G 60					302
Needles	2,905	3,617		52				X		1,505
W. Timber Mtn.	508	735		-						254
Worthington Mtn.	3,845	6,298			G 385				P	2,307
Uhalde Coal Valley	-	Combined with Worthington Mtn.								
Dry Farm	644	733	64	-	G 64			X		322
Pahroc	3,752	4,773	375		G 376					1,876
30-59% of Preference										
Sampson Creek	796	1,592	80	123						441
Tippett	7,228	14,455	723	655	A 723				S	4,269+
Red Hills	821	2,600		-						411
Muncy Creek	5,929	12,384		-					P S	2,964+
Meadow Creek	223	445			A 22					133
Bassett Creek	296	591			A 30					178
Devils Gate	695	1,810		-	A 69					417
Taft Creek	711	1,831	71							284
Stephens Creek	115	318	12							46
Strawberry Creek	345	585	35							137
Majors	6,268	12,535			A 627				P	3,761+
Willard Creek	566	1,132	57		G 57					283

Table 3-13. Continued

Allotment	Present Livestock Use	Initial Livestock Use	Reductions Due to Overutilization	Horse Removal	Increases Due to Intensive Management A = AMP G = Grazing Systems	Seed 2000 ac Is Use	Seed 475 ac Multiple Use	Fence 84 mi	Pipeline 15 mi Springs (15) Wells (6) Reservoirs (2)	Short Term
30-59% of Preference - Continued										
S. Spring Valley	3,165	6,329		1	A 316					1,900
Chokecherry	1,748	3,408			A 175					1,049
Cottonwood	2,345	4,106	235	239						1,177
Hamblin Valley	4,231	8,177	423	523	A 423					2,638
N. Chokecherry	364	641								182
McCoy Creek	254	508			A 25					151
Fox Mountain	2,301	6,680	230	39	G 230			X		1,190
Timber Mtn.	435	965		18						235
Irish Mtn.	1,458	2,915			G 146					875
Forest Moon	2,030	3,980	203	39	A 203			X		1,054
Bird Springs	420	736			G 42					252
Cottonwood	1,229	3,016	123		A 123					615
Wildhorse	158	315			G 16					95
Batterman Wash	1,072	2,093	107	-	G 107			X		536
Seaman Springs	554	1,619		35						312
Hardy Springs	3,037	5,746	304	-	A 304			X	R	1,519+
Sunnyside	3,390	8,787	339	89	A 339			X	P	1,784+
E. Water Gap	510	1,209	51	-	G 51			X		255
W. Water Gap	230	460	23							92
Wilson Creek	25,809	53,942	2,581	1,079	G 2,581	200	48	X	P S	14,217+
6-29% of Preference										
Becky Springs	669	3,842	67	152	G 67					487
Chin Creek	2,766	13,115	277	1411	A 277			X		2,794
Tippett Pass	501	8,177		56	A 50				S	356+
Pleasant Valley	100	405	10							40
Bastian Creek	226	1,778			A 23					136
Sacramento Pass	401	1,694	40						W S	160+
Willow Springs	1,914	6,608							P W S	957+
White River	96	405		-						48
Crescent	465	2,245								233
Reserved for Wildlife	0	-		-						
AUMs -										
Livestock	136,669	266,763	7,989	+5,581	+9,521	+200	+34	0	+7252	94,398+
Wild Horses		0		-5,581	0	0	0	0	0	0
Wildlife				0	0	0	+14	0	0	

offset part of the reductions due to overutilization. Therefore, licensed use would be 13,008 after adjustments in the fourth year. In the remainder of the short term, at least 1,926 additional AUMs of forage would become available due to AMPs, grazing systems, and water development to open up areas previously ungrazed. Therefore, at the end of short term, at least 14,934 AUMs of livestock grazing will be occurring in these 18 allotments.

Rate of recovery would vary, depending upon site potential of each vegetation community, present vegetation condition, present cover, natural seed sources, and climatic conditions (Stoddart and Smith 1955). Short term management actions, along with the livestock reductions, are expected to result in recovery and improved livestock forage condition and apparent trend from present levels in upland areas.

During the 3 years of heavy utilization, the livestock forage condition and apparent trend of riparian and wetland areas would decline, because livestock would probably concentrate in those areas. Behnke and Raleigh (1978) concluded that there are no management techniques, short of fencing, that can improve riparian vegetation that is grazed by livestock. Therefore, improvement in livestock forage condition and apparent trend in riparian areas would not occur in the short term. Since livestock would, similarly, congregate on wetland vegetation resulting in overutilization, wetland vegetation would also decline in livestock forage condition and apparent trend, and not improve from that level in the short term.

Thirty-four allotments (Table 3-13) (2,792,135 ac) are presently grazed at 30 to 59 percent of grazing preference (Table 1-2). In these allotments, grazing at preference would also significantly increase the grazing pressure. Three years of severe overgrazing would reduce vigor, reproduction, and productivity (as previously discussed), and kill many forage plants (Cook and Stoddart 1963), considerably reducing livestock forage condition and apparent trend. After 3 years, sufficient monitoring data would be available to make livestock adjustments. It is not known how much grazing use may need to be reduced once monitoring data becomes available. It is suspected that adjustments would range from complete removal of livestock for a full year to complete removal of livestock for 5 full years. Therefore, for analysis purposes, it has been assumed that livestock would be completely removed for 3 full years, followed by a 50 percent reduction from present use during the remainder of the short term.

In addition, almost half (16) of the allotments are problem area 1 allotments which are assumed to require an additional 10 percent reduction (4,874 AUMs) from present use to achieve a sustained yield utilization level (Table 1-2). The adjustments for problem 1 allotments would be partially offset by a 2,840 AUM increase due to removing wild horses. Therefore, livestock use beginning in the seventh year would be 36,610 AUMs. An additional 6,843 AUMs would accrue due to AMPs, grazing systems, and seedings in the 34 allotments (Table 3-13). By the end of the short term, livestock use would be at 43,453 AUMs. Additional unquantifiable AUMs may accrue in some allotments due to water development (Table 3-13).

Complete rest from livestock grazing would allow plants to build up their carbohydrate reserves, a primary factor influencing plant vigor (Trlica and Cook 1971). Ungrazed plants produce greater quantities of seed, and plants which reproduce vegetatively show almost equal response to the period of rest (Stoddart and Smith 1955). Rate of recovery would vary. Management actions are expected to result in some recovery of livestock forage condition and apparent trend in upland areas, but not to present levels. This slow recovery would be a significant adverse impact. As discussed above, riparian and wetland areas would be especially degraded and would recover only slightly in the short term.

Nine allotments (Table 3-13) (473,745 ac) are presently grazed at 6 to 29 percent of grazing preference (Table 1-2). In these allotments, grazing at preference would significantly increase grazing pressure. As previously discussed, 3 years of severe overgrazing would reduce vigor, reproduction, and productivity, and kill many forage plants, therefore reducing livestock forage condition and apparent trend, and nearly denuding some areas.

After 3 years, sufficient monitoring data would be available to make livestock reductions. It is not known how much grazing would need to be reduced once monitoring data becomes available. It is suspected that adjustments would range from complete removal of livestock for 2 full years to complete removal of livestock for 8 full years. Therefore, for analysis purposes, it has been assumed that livestock would be completely removed for 5 full years, followed by an approximate 50 percent reduction from 3-year average use during the remainder of the short term in all 9 allotments. Therefore, based on reasoning similar to that used for other groups of allotments above, livestock use by the end of the short term would be 5,211 AUMs.

It is suspected that by the end of the 5-year rest period, livestock forage condition and trend would improve, but still be lower than at present. Some areas may have been invaded by less palatable species such as juniper and sagebrush, changing vegetation type.

Grazing at 50 percent of 3-year average use, and improvements due to other management actions, such as AMPs and water development, would not improve livestock forage condition and apparent trend by the end of the short term, 2 years from the initiation of grazing. Riparian and wetland areas would have been seriously degraded, with little improvement when grazing was initiated again. These changes in livestock forage condition and trend would constitute a significant adverse impact.

In summary, allotments with present use at 60 percent of preference or greater (949,597 ac) would see an overall improvement in upland areas in livestock forage condition and apparent trend. Allotments with present use less than 60 percent of preference (3,265,880 ac) would decline in livestock forage condition and apparent trend. This would result in a net impact on 2,316,283 ac with livestock forage condition and apparent trend below present levels, a significant adverse impact.

Increased livestock use for 3 years around all riparian areas except those associated with Geyser and North creeks would seriously degrade the existing riparian vegetation. Livestock would undoubtedly concentrate on these areas, even after subsequent reductions. As discussed above, a number of studies have shown that livestock use generally does not allow for improvement in riparian vegetation. Therefore, over 2,050 ac of riparian vegetation would be degraded in the short term, a significant adverse impact.

The increased use of 11,700 ac of wetland vegetation would also degrade livestock forage condition and trend in these areas. Recovery would also not be expected to occur in the short term, a significant adverse impact.

Long term management actions would be similar to those of the short term; additional AMPs and grazing systems would be established, additional water sources would be developed, and more fences would be constructed. In addition, a policy of allowing natural fires to burn on their own in many portions of the Schell RA would be implemented. As previously discussed (under Proposed Action), these long term management actions would result in improved livestock forage condition and apparent trend throughout the Schell RA. However, those allotments with present use at less than 60 percent of preference would still not improve above present levels. This would be a significant adverse impact.

Recovery of riparian and wetland vegetation from short term actions would not be expected in the long term. This would be a significant adverse impact to riparian and wetland vegetation.

Poisonous Plants

Poisonous plants, especially halogeton, tend to dominate in disturbed areas, including heavily overgrazed lands. Therefore, poisonous plants would likely increase during the first 3 years of this alternative, especially in those allotments with present livestock use at less than 60 percent of preference. Present problems with poisonous plants are usually site specific, and probably would remain so in the short term, although significant portions of some allotments could be invaded by these species. Since there are no ways to quantify this potential adverse impact, in the worst case poisonous plants would become a serious problem in the short term, and continue as such in the long term.

Sensitive Plants

Most sensitive plants in the Schell RA grow in restricted areas and are unpalatable, therefore impacts due to grazing sensitive plants are probably negligible even with increases in livestock numbers. Livestock trampling can be a problem to some plants, such as the Great Basin fishhook cactus (*Sclerocactus pubispinus*) and the clokey pincushion cactus (*Coryphantha vivipara* var. *rosea*) (Welsh and Neese 1980). Therefore, the chance for loss of sensitive plants is high under this alternative, although actual impacts cannot be accurately determined.

Short Term Versus Long Term Productivity

This alternative would favor short term use of the vegetation over long term productivity. Short term gains in livestock use would be offset by future reduction in forage productivity.

LIVESTOCK GRAZING

Initially, livestock use would be licensed at grazing preference or greater if present use is greater than preference. This would result in a 92 percent increase from present use to a total of 262,224 AUMs. After 3 years, sufficient monitoring data would be available to make livestock adjustments. Allotments will be discussed in groups based on the percent of grazing preference presently used.

Six allotments (22,927 AUMs) are presently grazed at 90 percent of preference or greater (Tables 1-2 and 3-13). Increasing licensed use to preference in 5 allotments and grazing Geyser Ranch at present use (137 percent of preference) would increase use to 23,490 AUMs. After 3 years, sufficient monitoring data would be available to make livestock adjustments. As outlined in the Vegetation section, grazing use in the fourth year would be 22,979 AUMs. Additional forage would become available as a result of AMPs and grazing systems so that grazing use at the end of the short term would be 23,548 AUMs, a 621 AUM increase from present use.

Eighteen allotments (27,871 AUMs) are presently grazed at 60 to 89 percent of grazing preference (Tables 1-2 and 3-13). Increasing licensed use to grazing preference would increase use to 39,067 AUMs. After 3 years, sufficient monitoring data would be available to make livestock adjustments. As outlined in the Vegetation section, licensed use in the fourth year would be reduced to 13,008 AUMs. At least 1,926 additional AUMs would become available as a result of AMPs, grazing systems and water development. Therefore, by the end of the short term, licensed use would be at least 14,934 AUMs, a 12,937 AUM decrease from present use.

Thirty-four allotments (78,733 AUMs) are presently grazed at 30 to 59 percent of grazing preference (Tables 1-2 and 3-13). Increasing licensed use to grazing preference would increase use to 165,910 AUMs. As outlined in the Vegetation section, there would be no livestock use for 3 years. Livestock use in the seventh year would be 37,333 AUMs. At least 6,842 additional AUMs would become available as a result of AMPs, grazing systems, range seedings, and water development. By the end of the short term, livestock use would be at least 43,453 AUMs, a 35,280 AUM decrease from present use.

Nine allotments (7,138 AUMs) are presently grazed at 6 to 29 percent of grazing preference (Tables 1-2 and 3-13). Increasing licensed use to grazing preference would increase use to

38,269 AUMs. As outlined in the Vegetation section, livestock use at the end of the short term would be at least 5,211 AUMs, a 1,927 AUM decrease from present use.

In conclusion, short term management actions would result in a temporary (3 years) significant increase in livestock grazing in the Schell RA. This would be followed by complete removal of livestock for 5 years in 9 allotments and for 3 years in 34 allotments. By the end of the short term, livestock use would be at least 94,398 AUMs, a 31 percent decrease from present use. This would be a significant adverse impact to livestock grazing.

Management actions in the long term would be similar to those of the short term; additional AMPs and grazing systems would be established, additional water sources would be developed, and additional area would be seeded. As previously discussed (under Proposed Action), long term management actions would result in improved livestock forage condition and apparent trend. As this occurs, livestock use would increase and the benefit of short term management actions would be realized. By the end of the long term, livestock use would still be significantly less than present use.

WATER QUALITY

Grazing at preference would result in a significant decrease in overall water quality, particularly in those allotments which would experience large (100 percent or more) increases in livestock usage. It is suspected that a number of springs and streams would exceed fecal coliform and turbidity levels, especially streams such as Siegal Creek where livestock use would be increased about 16 times over present use. Following the 3 years of grazing at preference, livestock numbers would be reduced (see Livestock Grazing below) and water quality would tend to improve. By the end of the short term, most streams and springs would probably have poorer water quality than at present, and it is likely that some would not meet Nevada water quality criteria. This would be a significant adverse impact.

In the long term, water quality would probably continue to improve so no significant adverse impacts would remain.

SOILS

In the short term, temporarily increasing livestock use to grazing preference would result in a loss of effective ground cover, thus increasing erosion throughout most of the Schell RA. Upland areas are expected to recover and improve in the 24 allotments being grazed at 60 percent of preference or greater as a result of moderate utilization and improved grazing management by the end of the short term. In the other 43 allotments, as well as in all riparian and wetland areas, erosion potential would not recover from the 3 years of heavy grazing. Erosion in these areas would be increased from present levels. Therefore, about 949,597 ac would improve in erosion characteristics, and 3,265,880 ac would decline, resulting in a net significant adverse impact to soils.

Management actions in the long term would be similar to those of the short term. Additional rangeland developments and the new policy regarding fire suppression would result in a temporary loss of vegetation cover and, thus, a temporary increase in soil ersoion. As discussed under Proposed Action, soil erosion should decline over the long term, due these actions. Moderate utilization and improved grazing management would also continue to decrease erosion. Even with these actions, improvement in those allotments presently being grazed at less than 60 percent of preference is not expected to reach present levels of erosion. This would be a continued significant adverse impact. Recovery is also not expected to occur in riparian and wetland areas which would still be subject to livestock concentration, and therefore have little chance for improvement.

Short Term Use Versus Long Term Productivity

This alternative would favor short term use of the soil resource over long term productivity. Soil erosion would increase in the short term, limiting future production. This would be an irreversible and irretrievable loss.

WILDLIFE

Big Game

Grazing at preference in the 6 allotments which are presently grazed at 90 percent of preference or greater would not have a significant effect on big game since the increase in grazing would be balanced by management actions such as AMPs and grazing systems. After a sustained yield utilization level is reached, the big game populations would remain essentially as they are at present.

Within the next category of allotments (60 to 89 percent of grazing preference), the impacts to big game would be more substantial. Although some grazing pressure would be balanced by management actions, forage to maintain present wildlife numbers would not be available. After the 3 years of grazing at preference and a sustained yield utilization is established, adequate forage for wildlife would still not be available as it would all be allocated to livestock. Some population losses would occur within these allotments but quantification is not possible.

Grazing at preference within the next 2 categories (grazing at 6 to 29 percent and 30 to 59 percent of preference) would result in the greatest impact to big game. These 2 categories of allotments contain 9 of the 14 allotments in the Schell RA which have key big game range. In addition, they contain 80 percent of the deer summer range and 95 percent of the key deer summer range where most of the livestock/wildlife problems exist (see Chapter 2). Grazing at preference would result in a decline in the condition on 137,000 ac of deer summer range, 92,000 ac of key deer summer range as well as 22,000 ac of key deer winter range and 980,000 ac of remaining habitat. This represents a change in well over 10 percent of important mule deer habitat and thus would be a significant adverse impact. Populations would be expected to decrease in excess of 20 percent in all allotments, regardless of the type of range or season of use, with the largest losses occurring in those allotments with key range. This would be a significant adverse impact to mule deer populations.

There would be a decline in condition on about 900,000 ac of pronghorn antelope range, of which 119,000 ac is winter habitat. Kidding grounds in the Chin Creek and Tippett Pass/Red Hills allotments would be severely overutilized resulting in a loss of food and cover for newborn animals. This represents about 80 percent of the kidding ground in the Schell RA. The above impacts would cause a population loss of greater than 20 percent of the present population of pronghorn and thus be a significant adverse impact.

In the long term, the big game situation would not change significantly from the discussion presented for the short term. Population would remain at low levels.

Upland Game and Waterfowl

The impacts to upland game would range from slight to severe depending on the category of allotments in which they occur. The loss of food and cover plants, nest trampling, and degradation of meadows would be slight to moderate in the 90 to 100 percent of preference category with population losses being similar. The habitat disturbance in the remaining categories (60 to 89 percent, 30 to 59 percent, and 6 to 29 percent) would likely be severe resulting in significant population losses. The adverse effects upon riparian areas as it relates to upland game habitat would be significant in all categories of grazing pressure, except the 90 to 100 percent group (Geyser and North creeks).

The wetlands areas, as with riparian zones, would be severely overgrazed in all categories. There would be no improvement from the present situation in the 90 to 100 percent of preference and further degradation would occur in the other categories. This would be a significant adverse impact to waterfowl.

Nongame Wildlife

The existing habitat conditions for nongame wildlife would remain and possibly decrease slightly in the 90 to 100 percent of preference category allotments; however, the diversity and structural layers that contribute to the quality of nongame habitat would be significantly and adversely altered on the other 92 percent of the Schell RA. This would lead to a substantial loss in numbers as well as a decrease in species diversity of small nongame birds and mammals and their predators, a significant adverse impact. In the long term, some recovery would be expected but habitat, and therefore population, would still be below present levels.

AQUATICS

The initial 3-year increase in livestock use in most allotments would have negative effects on most streams in the Schell RA. It is suspected that livestock use around streams would heavily utilize existing riparian vegetation, streambanks would be trampled and instream habitat would decline in quality. This would occur on all streams except Geyser and North creeks where livestock increases would not occur because the Geyser Ranch allotment is presently at 137 percent of preference. Of the other 24 streams, Silver Creek and Hampton Creek would probably be the least affected since increases in livestock use in the Smith Creek allotment would only be about 15 percent. Of the other 22 streams, all would see about a 100 percent increase in livestock use for 3 years, except Siegel Creek (Tippett Pass allotment) where increases would be about 16 times the present use. Siegel Creek would be seriously damaged, probably dropping from its present excellent condition to poor.

The other streams would be degraded, but not to the extent of Siegal Creek. According to the assumption made in the Vegetation Section, after the 3 years of grazing at preference, use would occur at reduced levels, or after 3 years of rest on all allotments with fish streams except Tippett Pass (Siegal Creek), where 5 years of rest would occur before grazing. It is suspected that 3 or 5 years of rest would not be sufficient to improve the stream habitat quality above present levels once it had been degraded by 3 years of heavy grazing. Duff (1979) suggested 6 to 8 years of rest would be required for recovery of a stream in eastern Utah. Therefore, all streams except Geyser and North creeks, and perhaps Hampton and Silver creeks, would remain in a lowered habitat classification than at present. It is suspected that since much of the range near streams would also have been seriously overgrazed, that riparian-stream areas would receive disproportionately higher use even after livestock reduction and short periods of rest. This would be a significant adverse impact to streams in the Schell RA, since all but 5 miles of the fish streams would be impacted.

Fish populations in the streams would also decline, and may be eliminated from some areas of public land. Populations of Utah cutthroat trout in Pine (Ridge) and perhaps Hampton Creek would probably decline. Quantification of the potential loss is not possible with available data, but in the worst case this species could disappear on public land in Pine (Ridge) Creek. Rare fish populations in springs in the Sunnyside area may also suffer due to decreased water quality and a greater demand for water. After the 3 years of grazing at preference, these pressures would be lifted and the rare fish populations should return to present conditions.

In the long term, continued grazing along streams that were degraded in the short term would keep the habitat condition, and therefore fish populations, in a reduced state from that at present.

WILD HORSES

Under this alternative, all 466 wild horses would be removed. This would be a significant adverse impact to wild horses in the Schell RA. A number of horse herd units in other BLM Nevada and Utah Resource Areas would be affected, as well as wild horses on some Forest Service herd units that overlap with the Schell RA. It is not known how much these other areas would be affected, but some of their herds could be reduced by 20 percent by this action.

Mortality during roundup and holding activities would undoubtedly occur. Using past figures from the Ely District (1-2 percent), about 5 to 10 horses would die due to capture and holding.

RECREATION

The anticipated reduction in numbers of wildlife, especially big game, would adversely affect the recreation use of the Schell RA. The actual reduction in hunter days is not quantifiable since resulting wildlife numbers are unknown, but a significant reduction (more than 20 percent of some herd units) is anticipated. Therefore, it is assumed that at least a 10 percent reduction in hunters would occur in the short term, a significant adverse impact. A reduction in camping and ORV use of the Schell RA is also anticipated. Little improvement in the long term is expected, therefore continuing the adverse impact.

CULTURAL RESOURCES

The initial 3-year increase in livestock use would increase significantly the potential for adverse impacts to cultural resources due to trampling, rubbing, and increased erosion. This would be offset in some allotments by the elimination of wild horses. Impacts due to seedings, fences, pipelines, wells, and reservoirs would be mitigated by the SOP mentioned above. Following livestock reductions and grazing at sustained yields for the remainder of the short term, impacts would decrease considerably. But since cultural resources cannot be regained once lost, this alternative in the short term would potentially have a significant adverse impact.

In the long term, impacts should be insignificant as grazing would not increase substantially.

PALEONTOLOGY

Impacts to fossils could occur due to livestock trampling, construction of management facilities and roads, and vandalism. Since paleontological information for the Schell RA is limited, impacts are difficult to determine and their significance therefore elusive. Since the area includes many potentially significant fossils, grazing at preference could result in the loss of scientifically valuable fossils, a significant adverse impact.

ECONOMICS

Ranch Operations

The graze at preference alternative must be evaluated from three perspectives. First, grazing would be increased to licensed use for 3 years, then it would be reduced after monitoring to the levels indicated in Table 3-13. The third analysis would be the long term adjustments.

It is unlikely that grazing could occur at the preference level of use for several reasons. First, ranchers would not be able to increase the size of their herds to the levels indicated in Table 3-13. This would require them to purchase breeding animals and/or keep all females. Ranchers could not do this because it would change their cash flow significantly and would not allow them to meet financial obligations. Secondly, it is not likely that the resources on dependent properties could support the increases suggested. Third, it is not likely that sufficient labor is available in the area to provide the additional labor that would be required. As a result, the only viable alternative would be for ranchers in the Schell RA to sublease grazing to ranchers from other areas. However, the data in Table 3-14 indicate that if the above problems could be overcome, rancher incomes would increase dramatically, all variables would increase at least 40 percent. The major group that would be benefitted would be large cattle operators because they are currently taking the largest amount of nonuse. Only the small cattle operators would not increase incomes by 100 percent or more. This alternative would likely maintain the capital value of the BLM livestock grazing permits but, as mentioned above, it is unlikely that the grazing level indicated above could be attained.

Following the 3 years of grazing at preference, major reductions in livestock use would occur (see Vegetation Section). Thirty-four allotments would be rested 3 years, 9 allotments would be rested 5 years. This rest would cause major problems for the affected ranchers and some would be expected to go out of business. Medium sized cattle ranches would be the most severely impacted, large cattle ranches the least affected. Throughout the remainder of the short term, livestock use would be allowed once again on these allotments. Table 3-15 shows ranch budget changes for the end of the short term, without increases in livestock use due to water and seeding development. All ranch sizes would be significantly reduced, medium sized cattle operators would be hurt the most with a 20 percent decrease in income. Large cattle ranches would be hurt the least with about a 6 percent drop in income.

Table 3-16 shows the effects of maximizing the water and seeding development on the various ranch sizes. Changes can best be noted by comparing Tables 3-15 and 3-16. Medium sized cattle ranches could benefit substantially from improvements, increasing about 25 percent. Sheep operators could also increase significantly, about 10 percent. The other size classes are improved but not significantly. In summary, short term actions as a whole would be significantly adverse to small cattle ranches, but not significant to any other ranch class, if range improvements were to be developed for optimal benefit to a ranch class.

Long term adjustments in livestock AUMs are not quantifiable but slight increases are expected. Therefore, economic improvement is expected from the short term, although probably not to a significant degree.

Regional

The regional impacts of grazing at preference would be significant in the first 3 years, and in the short term with or without range improvements. In the first 3 years, employment and sales in the livestock, food and feed grains, and wholesale and retail sectors would all increase significantly (Table 3-7). Following livestock

Table 3-14. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Graze at Preference Alternative, first 3 years.

	Cattle						Sheep	
	Small[a]		Medium[b]		Large[c]			
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$79,668	46.5	$213,301	103.8	$742,879	131.9	$440,962	101.1
Cash expenses	$42,226	47.3	$ 94,909	103.3	$397,047	124.4	$276,388	99.1
Net cash income	$38,134	40.9	$112,681	93.0	$338,691	120.9	$160,563	99.6
Net ranch income	$29,295	42.8	$ 90,046	96.4	$263,759	122.2	$123,842	105.1
Number of cows/ewes	311	46.7	839	103.6	3,290	124.9	7,163	101.1
Hours labor	3,020	47.0	8,138	103.0	19,363	125.1	25,404	101.1

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

Table 3-15. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Graze at Preference Alternative, short term, without water developments and seedings.

	Cattle						Sheep	
	Small[a]		Medium[b]		Large[c]			
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$48,699	-10.5	$83,153	-20.6	$312,694	-5.3	$199,418	-9.1
Cash expenses	$24,417	-10.6	$36,535	-21.2	$167,859	-5.1	$127,298	-8.3
Net cash income	$24,282	-10.3	$46,618	-20.2	$144,835	-5.5	$ 72,119	-10.4
Net ranch income	$17,979	-12.4	$34,983	-23.7	$110,943	-6.5	$ 52,293	-13.4
Number of cows/ewes	190	-10.4	327	-20.6	1,385	-5.3	3,239	-9.1
Hours labor	1,839	-10.5	3,182	-20.6	8,142	-5.3	11,489	-9.1

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

Table 3-16. Changes from present levels in selected economic variables for ranching, Schell Resource Area, Graze at Preference Alternative, short term, with water developments and seedings.

	Cattle							
	Small[a]		Medium[b]		Large[c]		Sheep	
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$49,208	-9.5	$109,231	4.3	$316,933	-4.0	$219,547	0.1
Cash expenses	$24,677	-9.7	$ 48,414	4.4	$170,057	-3.9	$138,973	0.1
Net cash income	$24,512	-9.4	$ 60,817	4.2	$146,880	-4.2	$ 80,574	0.1
Net ranch income	$18,207	-11.3	$ 48,085	4.9	$112,729	-5.0	$ 60,481	0.2
Number of cows/ewes	192	-9.4	429	4.1	1,404	-4.0	3,566	0.1
Hours labor	1,858	-9.5	4,178	4.2	8,252	-4.1	12,648	0.1

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

reductions in years 3 to 8, significant decreases in employment and sales in the livestock and food and feed grain sectors would occur. At the end of the short term, reductions in employment and sales in these 2 sectors would still be significantly decreased from present levels. This would be a significant adverse impact. Thus, a boom-bust effect would occur in the livestock and food and feed grain industries. A similar small change would occur in the regional economy. The third most affected sector (wholesale and retail trade) indicated only about a 7 percent change in employment from boom to bust, and the F.I.R.E. sector had less than a 5 percent cycle (Table 3-7).

A reduction in hunter days is expected with the change in available forage for game species in the region. However, in the short and longer term, significant changes in hunter days and the associated expenditure is expected but cannot be quantified.

Construction expenditure is projected to be an average of $188,460 per year in the short run (5 years) and $102,900 annually in the long term, both of which are insignificant (less than 5 percent) increases in total construction activity.

In the long term, regional economics are expected to improve slightly, but would still probably be significantly below present levels.

SOCIAL CONDITIONS

Ranching Community

If it is assumed that ranchers would increase their scale of operation to take advantage of the opportunity to graze at full active preference, then the short and long term impacts would be negative. According to the Vegetation Section, grazing at 100 percent of active preference for 3 years would abuse the range to the extent that by the third year monitoring data would indicate the need to drop licensing significantly below current levels. In this case, many operators would go out of business, and in some cases would have to leave the area in search of alternative employment.

Most ranchers claim that if given the opportunity to graze at full active preference, they would not change their operations. They do admit, however, there would be some who would overuse the land. The historical data on grazing practices indicate this would be the case. Research on choice dilemma decisions, where social actions have the opportunity to maximize short-term self interests with the risk of endangering long-term interests, suggest that the levels of abuse would probably be higher than the ranchers suspect. This would be the case especially among those who may have less long-term commitment to ranching and the area, for example, absentee landowners, operators nearing retirement, or operators already considering selling out or barely making a profit.

Ranchers would support the removal of all wild horses from the Schell RA. This proposal is certain, however, to result in increased resentment, hostility, and social conflict from special interest groups directed in part toward ranchers.

Local Community

Impacts of this alternative on the local non-ranching community would be mixed. Implementation might briefly enhance the viability of the area's ranching industry, with effects on the local community including some increases in economic viability. However, if the open licensing is abused by operators, and it is assumed that in the long term available AUMs would be significantly reduced, the negative impacts to ranchers would also be felt by the local non-ranching community. The failure of some ranching operations and the probable emigration of some local ranchers would have several negative impacts, including reduced economic viability, a deterioration of established social interrelationships and leadership structures, and a deterioration of the continuity and stability which are valued components of the local lifestyle.

Although local support for actions which prioritize production of food and fiber on public lands would generate support for this alternative, it is also likely that most local residents would oppose complete elimination of wild horses. Local residents strongly favor adherence to the doctrine of multiple use. Implementation of this alternative would therefore tend to increase dissatisfaction with BLM policy and lead to further tension and conflicts between the agency and local community.

Regional and National

Implementation of the Graze at Preference alternative would result in severe adverse impacts for the regional and national interest groups considered in this assessment. Each of the representatives contacted rejected the concept of increased prioritization of livestock grazing in the area, particularly in light of their assertions of current overgrazing. Implementation would eliminate opportunities of wild horse groups and their supporters to see and enjoy free-roaming herds of wild horses in the area. Groups concerned with wildlife, wilderness, recreation, and natural resource protection would find the appeal of the Schell RA reduced substantially as a result of increased grazing and deterioration of natural habitat conditions. When contacted about this alternative, group representatives voiced adamant opposition and in some cases assured a response involving court action. Consequently, implementing this alternative would increase conflicts and tensions and the probability of legal confrontations between each of these groups and BLM.

SUMMARY

The Graze at Preference alternative would not meet any of the objectives in either the short or long term. The objective of Problem 1 (over-utilization) would be partially met in both the long and short term, but only after considerable overutilization was allowed to occur. All other problems would be considerably worsened under this alternative.

NO LIVESTOCK GRAZING

WATER RESOURCES

The removal of livestock from the Schell RA would improve water quality in streams and springs throughout the area. Additional numbers of wild horses could cause site specific water quality problems around springs and streams, hence reducing water quality in a few areas, but probably not to the present level with livestock. Therefore, this alternative overall would have a beneficial but insignificant impact on water quality in the Schell RA.

SOILS

The removal of livestock would result in an increase of effective ground cover, thus decreasing erosion throughout most of the Schell RA, and especially on the 23 percent (981,951 ac) in a downward apparent trend. These projections reflect professional judgement based on the impacts projected for vegetation. This would be a significant beneficial impact to the soils of the Schell RA.

VEGETATION

The impact on vegetation as a result of this alternative would be an improvement in livestock forage condition and apparent trend throughout most of the Schell RA as a result of the removal of all domestic livestock from BLM-administered lands. This would be a significant beneficial impact. The removal of livestock would also result, as discussed in the Proposed Action, in improvement of riparian and wetland vegetation. Some of this improvement may be offset by increased utilization of some areas by wild horses, but probably not sufficiently to prevent a significant beneficial impact to riparian and wetland vegetation.

LIVESTOCK GRAZING

Under the No Livestock Grazing alternative, all domestic livestock grazing on BLM-administered public land within the resource area would be eliminated. This alternative would require permittees to reduce their herds to a size that could be maintained on their base property, purchase feed, move to rented pastures outside the resource area, or go out of the livestock business. This would be a significant adverse impact to livestock grazing in the Schell RA.

WILDLIFE

Big Game

The elimination of livestock grazing would allow the immediate availability of forage to support reasonable numbers of big game (47,837 AUMs). Probably the single most important benefit would be the total elimination of competition for forage on crucial and summer ranges of mule deer. It is anticipated mule deer would reach reasonable numbers; however, due to a lack of data, the response of elk and bighorn sheep cannot be predicted although the potential for increase would be present.

Upland Game, Waterfowl, Nongame Wildlife

There would be a significant improvement in riparian areas, meadows, and aspen stands, as well as a general increase in the quality and quantity of food and cover throughout the Schell RA. This would be a significant beneficial impact to upland game.

The elimination of grazing from the wetlands areas would have significant beneficial impacts to waterfowl, as discussed in the Resource Protection alternative.

There would be a significant beneficial impact to the habitat and populations of nongame wildlife as the structural complexity of the vegetation communities increase with the elimination of grazing.

AQUATICS

Elimination of livestock grazing would have a significant beneficial impact on all stream miles on BLM lands. All 26 fish streams on BLM land would maintain or improve to good or excellent condition, except perhaps in a few areas where wild horse damage would prevent improvement. This would result in a significant beneficial impact.

WILD HORSES

Under this alternative, over 2,000 horses would be managed for in the Schell RA. Numbers of horses would be allowed to increase naturally up to this level. This would be a significant beneficial impact to the wild horse resource in the Schell RA. Changes in the geographical boundaries of herd units, or additional herd units, may be needed to manage the increased numbers.

RECREATION

Under this alternative increases in outdoor recreation opportunities may be expected due to increased numbers of deer and other wildlife and improvement of stream habitat due to the lack of grazing pressure. The fisherman days would be expected to increase, creating a beneficial but unquantifiable impact. The number of deer hunter days would be increased by 7,000 if reasonable numbers of deer were attained.

The increased number of wild horses expected under this alternative could become a recreation attraction. Associated backcounty camping and ORV use could increase, but probably not to a level that would produce significant adverse biological impact. Overall, there would be a significant beneficial impact in recreational use.

CULTURAL RESOURCES

Elimination of livestock grazing would be beneficial to cultural resources. Vegetation cover would improve with the removal of livestock, thereby reducing impacts to archaeological sites due to erosion and vandalism. Adverse impacts to cultural resource sites caused by livestock trampling would be eliminated; however, such impacts caused by wild horses would increase as an optimum number of wild horses would be allowed in the resource area, though not to a significant level.

ECONOMICS

Ranch Operations

If all livestock were removed from Schell RA lands, it is unlikely that many ranchers would be able to continue operation. The expected losses that would occur are shown in Table 3-17. Only sheep producers would have net cash incomes that would be sufficient to pay interest costs on nonland capital even if no income was used for family living expenses. The resulting ranch sales would probably depress local land prices and would result in losses in wealth as well as income. This does not mean that ranching would not exist in the area but that the number of ranchers would decline to a level that could be supported by the private, state, and Forest Service land base.

Regional Economics

The livestock and food and feed grains sectors would suffer relatively large impacts--greater than 50 percent reductions in employment and a 20 percent reduction in sales in the livestock sector (Tables 3-6 and 3-7). These would be significant adverse impacts. The effect on the total economy is less than 5 percent of the total gross output and less than 2 percent of labor income and value added. The recreation demand would increase by 7,000 hunter days, which is 16 percent of current levels, as indicated in the Resource Protection Alternative, but less than a 5 percent increase in regional wholesale and retail trade. Construction for range improvements is projected to be $175,000, or $35,000 annually for 5 years, and is less than one percent of current activity. Long term investment is projected to be less than $35,000 per year, and is insignificant.

SOCIAL CONDITIONS

Ranching Community

The consequences of this proposal would be the most adverse for all ranching operations in the Schell RA. The impacts on the economic, psychological, and social well-being and social conflict specified for the Resource Protection alternative would apply here, though in far greater magnitude. According to the survey results, without grazing privileges on these public lands, most of the ranchers would go out of business. The gravity of this life change would be compounded by significant reductions in the value of the ranches so that owners' investments would not be returned by a sale. Ranchers would then have fewer resources with which to move and reestablish themselves elsewhere. In addition, ranching as an occupation, lifestyle and form of community would be almost entirely eliminated from the area.

Table 3-17. Changes from present levels in selected economic variables for ranching, Schell Resource Area, No Livestock Grazing Alternative.

	Cattle							
	Small[a]		Medium[b]		Large[c]		Sheep	
	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial	Amount	% change from initial
Gross income/sales	$38,685	-28.9	$60,199	-42.5	$279,259	-15.5	$164,162	-25.1
Cash expenses	$21,844	-19.3	$40,924	-29.9	$135,541	-11.6	$ 62,019	-22.9
Net cash income	$16,841	-38.4	$19,275	-58.4	$143,718	-18.8	$102,143	-26.4
Net ranch income	$10,964	-47.2	$ 8,606	-74.6	$111,378	-21.7	$ 82,785	-30.3
Number of cows/ewes	150	-29.2	237	-42.5	1,237	-15.4	2,667	-25.1
Hours labor	1,480	-27.9	2,203	-45.0	7,272	-15.5	9,458	-25.1
Interest on non-land investments	16,431		27,238		123,384		41,050	

[a] Up to 350 head.

[b] 350-799 head.

[c] 800 head or more.

Local Community

Implementation of the No Grazing alternative would result in strong opposition from the local nonranching community. Lost business activity and a probable outmigration of some ranchers would contribute to instability, a potential leadership vacuum, and the disruption of established interactional patterns. Valued lifestyles derived from the ranching character of the area would be disrupted, and intense animosity toward BLM would emerge. In combination these changes would be disruptive in terms of community satisfaction and functional viability. Though nonquantifiable, there would therefore be a significant adverse overall impact on the local community.

Regional and National

Persons interviewed as representatives of wild horse, wildlife, wilderness, outdoor recreation, and natural resource protection interest groups were united in recognizing the ranching industry as a prime contributor to the unique and valued social and economic climate of the area, and did not advocate the complete elimination of grazing from the Schell RA. Nevertheless, implementation of this alternative would enhance opportunities for enjoyment of aesthetic and other amenities which these groups wish to preserve in the Schell RA. Anticipated resource base improvements would be highly consistent with the basic goals and objectives of these various interest groups. Therefore, despite a potential for increased conflict with livestock interests, the overall impact on the regional and national interest groups under consideration would be positive.

SUMMARY

The No Livestock Grazing alternative would meet the objectives of Problems 1, 2, 3, and 5 (improper utilization, wildlife numbers, riparian-wetland condition, and wild horse numbers) in the short term. Problem 4 (livestock use) would be considerably aggravated by this alternative.

NO ACTION

WATER RESOURCES

No significant changes would be expected under this alternative. Those streams or springs reduced in water quality could well be offset by improvements in others.

SOILS

The significant impacts of the No Action alternative would be an increase of effective ground cover on about 33 percent (1,411,704 ac) of the Schell RA which is in an upward apparent trend, and a decrease in the effective ground cover on about 23 percent (981,951 ac) of the Schell RA which is in a downward apparent trend. Thus, soil erosion would decrease on a net of about 10 percent of the Schell RA. These projections reflect professional judgement based on the impacts projected for vegetation. The net effect of these impacts would be a significant beneficial impact to the soils of the Schell RA.

VEGETATION

Livestock Forage Condition and Trend

The significant impacts of the No Action alternative on vegetation would be a general improvement on about 33 percent (1,400,000 ac) of the Schell RA which is currently in an apparent upward trend, and deterioration in livestock forage condition on about 23 percent (980,000 ac) which is currently in an apparent downward trend. There would be no apparent change on the remainder of the area. This represents a net improvement on about 10 percent of the Schell RA, which would be a significant beneficial impact.

Short-term Use Versus Long-term Productivity

Under the No Action Alternative, present trends in vegetation would continue. This would result in a long-term decline in vigor, cover, density, diversity, and productivity of livestock forage species on the area showing a downward trend (23 percent of the Schell RA). This would be offset to some degree, by a long-term benefit to vigor, cover, density, diversity, and productivity of livestock forage species on the area showing an upward trend (33 percent of the Schell RA).

LIVESTOCK GRAZING

This alternative proposes that all livestock use would continue at the last 3-year average licensed use level as described in Chapter 2. There is no available data to use to judge how potential future vegetation changes (see Vegetation Section) would affect livestock AUMs. In the worst case, allotments with significant portions in a downward trend may be severely overgrazed at existing grazing levels and livestock reductions could force the operators out of business.

WILDLIFE

Big Game

Elk, pronghorn antelope, and bighorn sheep would be expected to remain at existing levels. Mule deer populations, however, may exhibit continued declines in the Chin Creek, Tippett, Pleasant Valley, and Wilson Creek allotments. As discussed in Chapter 2, deer herds which depend on summer range within these allotments appear to be remaining at low levels as a result of forage competition. It is not known how much these populations may decline, but continued grazing at existing levels could be a significant adverse impact to mule deer populations in the long term.

Upland Game, Waterfowl, Nongame Wildlife

The poor condition of wetlands, riparian areas, and some meadows and aspen groves would remain since overgrazing would continue. Wildlife populations would be expected to remain essentially at existing levels.

AQUATICS

Stream habitat quality is not expected to change much under this alternative. Some streams may decline in quality, especially those in allotments which are primarily in a downward trend. Other streams may improve, primarily those in allotments with primarily an upward trend. Overall, impacts are not expected to be significant.

WILD HORSES

Under this alternative, the present number of wild horses would remain the same (see Table 1-2). Since vegetation condition is not expected to change much under this alternative, herd viability and health would not change significantly and there would be no significant impacts to wild horses.

Periodic roundups would be required to maintain present levels, with a 1 to 2 percent mortality expected.

RECREATION

The No Action alternative may have a significant adverse effect on hunting in the Schell RA, especially if deer numbers decline 10 percent or more in the long term. A worst case analysis would predict a significant impact due to a reduction in hunter days.

CULTURAL RESOURCES

Damage to cultural resource sites due to livestock and wild horse trampling and rubbing would continue at its present rate. Since that rate is not known, its significance cannot be quantified. Since no additional livestock support facilities or seedings are proposed in this alternative, impacts would likely not be significant.

ECONOMICS

There are no available data that can be used to judge how potential future vegetational changes would affect livestock AUMs. Allotments whose trend is downward could be overgrazed if current use was maintained. This continued downward trend would eventually force operators using these allotments to reduce their use, perhaps putting some of them out of business. However, it is not possible at the present time to estimate when and/or if this would occur. No changes in Regional Economics can be estimated for similar reasons, except that some benefits due to the expenditures for seeding maintenance are expected, although they would be insignificant.

SOCIAL CONDITIONS

Ranching Community

Ranchers are dissatisfied with present conditions and are anxious for the BLM to make changes by using their management tools and revenue from grazing fees to develop the grazing potential of the area. The adoption of a plan limiting services and further range improvements and fixing wild horse herds at present levels would stifle improvements to rancher operations and engender frustration, increased alienation, and further resentment toward the BLM and other government agencies. The No Action decision would have a significant adverse impact on relations and cooperation between the ranchers and the BLM.

In the absence of actions to improve riparian and wetland habitat, and the maintenance of present levels of wild horses and livestock, it is expected that relationships among ranchers, special interest groups, and BLM would continue to be strained.

Local Community

Interviews with local residents indicated little dissatisfaction with current community conditions or with existing management of, or conditions in, the Schell RA. Therefore, no significant impacts on the local community would be anticipated if the No Action alternative were implemented.

Regional and National

Persons contacted as representatives of wild horse, wilderness, outdoor recreation, wildlife, and environmental protection interest groups were unanimous in expressing dissatisfaction with present management practices and range condition trends in the Schell RA. All indicated opposition to continued livestock grazing at current levels without the development of additional programs to improve the quality of the resource base of the area. Implementation of the No Action alternative would be opposed by these groups, contributing to increased animosity toward and dissatisfaction with BLM management policies, an adverse though non-quantifiable impact.

SUMMARY

The No Action alternative would not meet any of the objectives of the 5 problems facing the Schell RA. All problems would either remain fairly constant, or gradually worsen as the underlying factors causing the problems continue to work unabated.

CUMULATIVE IMPACTS

Since impacts of livestock changes generated by Type II economic analysis for all alternatives are insignificant to the regional economy, they will not substantially effect cumulative impacts. Even the Grazing at Preference alternative would not be expected to have more than a short term boom-bust effect on the livestock and food and feed grain sectors. Note that the third most effected sector had less than a 5 percent increase in employment. The White Pine Power Project would employ up to 2,000 workers during the construction phase and 525 workers during the operation phase. The resulting impacts would be so large as to make grazing changes insignificant in the aggretate community growth, even for the Grazing at Preference alternative. It is likely, however, that if the White Pine Power Project is constructed in the Schell RA, additional demands for housing and land will cause current landowners to experience equity gains far in excess of the effects of grazing changes.

There is one further important issue, however; that is the cumulative effects of changes in grazing policies for surrounding resource areas. The primary reason for the relatively small effect of the Schell RA grazing changes on large ranchers is the availability of other leased grazing, which is likely made up of other BLM grazing permits to an important degree. The effect of cumulative changes on all BLM resource areas may be much more severe on large ranchers than a single grazing EIS might indicate.

CHAPTER 4

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CHAPTER 5

PUBLIC PARTICIPATION

Scoping

Communication and consultation with all interested public land users and other concerned people have been important components in the Schell planning/MFP/EIS process and they will continue to be important in the MFP III decision making and implementation processes. Public participation--both formal and informal--will continue through such means as comment periods, news releases, Coordinated Resource Management and Planning (CRMP) and informational meetings.

EIS scoping meetings and public meetings for comments on MFP II recommendations were held jointly on April 6, 1981, in Pioche, Nevada, April 7, 1981, in Baker, Nevada, April 9, 1981, in Ely, Nevada, and on April 13, 1981, in Reno, Nevada. Brief meetings with local and state governmental entities were held on April 6, 1981, for the Lincoln County Commissioners, April 7, 1981, for the White Pine County Commissioners, and April 13, 1981, for the Nevada State Clearinghouse and Nevada Congressional Delegation.

Written comments and suggestions from individuals and interest groups were accepted from February 27 through May 15, 1981. The Federal Register, dated April 6, 1981, listed the notice of intent to prepare an EIS for the Schell RA. Governmental agencies that provided written comments included the Bureau of Indian Affairs and the Governor's Office of Planning Coordination. Other agencies contacted during scoping included the Nevada Department of Wildlife, U.S. Fish and Wildlife Service, Soil Conservation Service and U.S. Forest Service. Interest groups that responded in writing included Natural Resources Defense Council, Inc., Sierra Club, WHOA , and Resource Concepts Inc. for the Nevada Grazing Board.

Interagency Contacts

Professional contacts have been made with the Nevada Department of Wildlife, the U.S. Fish and Wildlife Service, and the USDA Soil Conservation Service.

Coordination will be initiated with the Nevada Department of Highways should fencing of pasture and allotment boundaries occur along highway rights-of-way. Also applications for water rights will be filed with the Nevada State Water Engineer for water projects.

The State Historic Preservation Officer was consulted on possible impacts to cultural resources (see Appendix E).

The Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture, provided economic data for use in the EIS. These data were based on meetings with area ranchers and budget information gathered by the ESCS as part of a nation-wide study.

Agencies, Organizations, and Persons to Whom Copies of the Draft EIS Will Be Sent

FEDERAL AGENCIES

Office of Public Affairs, BLM
18th and C. Streets
Washington, DC 20240

Nevada State Office, BLM
Room 3008, Federal Building
300 Booth Street
Reno, NV 89509

Battle Mountain District Office, BLM
North 2nd and South Scott Streets
Battle Mountain, NV 89820

Carson City District Office, BLM
1050 E. Williams Street
Carson City, NV 89701

Elko District Office, BLM
2002 Idaho Street
Elko, NV 89801

Las Vegas District Office, BLM
4765 West Vegas
Las Vegas, NV 89102

Winnemucca District Office, BLM
705 East 4th Street
Winnemucca, NV 89445

Utah State Office, BLM
136 East South Temple
Salt Lake City, UT 84111

Salt Lake District Office, BLM
2370 South 2300 West
Salt Lake City, UT 84119

Cedar City District Office, BLM
1579 N. Main St.
P. O. Box 729
Cedar City, UT 84720

Richfield District Office, BLM
150 E. 900 N.
P. O. Box 208
Richfield, UT 84701

Fillmore Area, BLM
P. O. Box 778
Fillmore, UT 84631

Soil Conservation Service
State Office
Downtown Post Office Bldg.
Reno, NV

Soil Conservation Service
Ely Field Office
1190 Avenue, East
East Ely, NV 89315

Humboldt National Forest
Mountain City Hwy
Elko, NV 89801

Humbolt National Forest
350 East 8th
East Ely, NV 89315

U.S. Fish and Wildlife
4600 Kietzke Lane
Reno, NV 89502

Bureau of Mines
Room 202
1605 Evans Avenue
Reno, NV 89502

Bureau of Reclamation
705 N. Plaza
Room 325
Carson City, NV 89701

National Park Service
Western Regional Office
Box 36063
San Francisco, CA 94102

Bureau of Indian Affairs
Eastern Nevada Agency
P. O. Box 28
Elko, NV 89801

U.S. Geological Survey
4600 Kietzke Lane
Reno, NV 89502

National Park Service
Lehman Caves National Monument
Baker, NV 89311

Bureau of Indian Affairs
Box 7007
Phoenix, AZ 85001

Environmental Protection Agency
944 E. Harmon Avenue
Las Vegas, NV

Environmental Protection Agency
215 Fremont
San Francisco, CA

Department of Energy
Reno Office
350 S. Center
Reno, NV

Department of Commerce
Office 777 West 2d
Reno, NV

Fish and Wildlife Service
Area Office
4620 Overland Rd.
Boise, ID

U.S. Fish and Wildlife Service
Suite 1692
Lloyd 500 Building
500 NE Multnomah Street
Portland, OR 97232

STATE AGENCIES

Nevada Department of Wildlife
P. O. Box 10678
Reno, NV 89520

State Planning Coordinator
Capitol Building
Carson City, NV 89710

Governor, State of Nevada
State Capitol Building
Carson City, NV 89710

State Clearing House
Room 45, State Capitol Bldg.
Carson City, NV 89701

LOCAL GOVERNMENT AGENCIES

White Pine County
Commissioners
Courthouse
Ely, NV 89301

Lincoln County Commissioners
Courthouse
Pioche, NV 89043

Nye County Commissioners
Courthouse
Tonopah, NV 89049

White Pine County Extension
P. O. Box 210
Ely, NV 89301

Lincoln County Cooperative
Extension Service
Caliente, NV 89008

Nye County Cooperative
Extension Service
Tonopah, NV 89049

UNIVERSITIES

University of Nevada
Dean, College of Agriculture
Reno, NV

University of Nevada
Department Chairman
Renewable Nature Resources
Valley Road
Reno, NV

University of Nevada
Library
Valley Road
Reno, NV

Desert Research Institute
University of Nevada
Valley Road
Reno, NV

ELECTED OFFICIALS

Honorable Howard W. Cannon
U.S. Senator
Room 4024, Federal Bldg.
300 Booth Street
Reno, NV 89301

Honorable James Santini
Congressman
Room 4620, Federal Bldg.
300 Booth Street
Reno, NV 89502

Honorable Paul Laxalt
U.S. Senator
765 North Plaza Street
Carson City, NV 89710

Mr. John Polish
District 35 Assemblyman
675 Murry Street
Ely, NV 89301

Mr. Steve Coulter
Assemblyman Environmental
and Public Resources
Committee

Mr. Richard Blakemore
State Senator
Rm. 321, Capitol Complex
Carson City, NV 89710

ORGANIZATIONS

WHOA
P. O. Box 555
Reno, NV 89504

Sierra Club, Toiyabe Chapter
P. O. Box 8096
University Station
Reno, NV 89507

Resource Concepts, Inc.
340 N. Minnesota Street
Carson City, NV 89701

Natural Resource Defense
Council, Inc.
25 Kentucky Street
San Francisco, CA 94108

International Society for the
Protection of Wild Horses
and Burros
11790 Deodar
Reno, NV 89506

Natural Resource Defence
Council, Inc.
New York Office
122 E. 42nd Street
New York, NY 10017

Nevada Outdoor Recreation
Association
Box 1245
Carson City, NV 89701

Nevada Woolgrowers Association
Box 88
Ely, NV 89301

The Wildlife Society
P. O. Box 1806
Carson City, NV 89710

Ely District Advisory Council
1385 Avenue E
Ely, NV 89301

Ely District Grazing Advisory Board
(Van C. Gardner)
Lund, NV 89317

Nevada Cattlemens' Assoc.
Steptoe Ranch
Steptoe Route
McGill, NV 89318

APPENDICES

A-PLANT SCIENTIFIC NAMES

B-LIVESTOCK FORAGE CONDITION

C-RANGE TREND

D-PROGRAMMATIC AGREEMENT

E-LETTER FROM STATE HISTORIC PRESERVATION OFFICER

APPENDIX A

Common and Scientific Names of Plants
Listed in Table 2-1

Common Name	Scientific Name
Grasses, Sedges, and Rushes	
Alkali dropseed	*Sporobolus aeroides*
Basin wildrye	*Elymus cinereus*
Bluegrass	*Poa spp.*
Bottlebrush squirreltail	*Sitanion hystrix*
Cheatgrass	*Bromus tectorum*
Crested wheatgrass	*Agropyron cristatum*
Galleta	*Hilaria jamesii*
Idaho fescue	*Festuca idahoensis*
Indian ricegrass	*Oryzopsis hymenoides*
Inland saltgrass	*Distichlis stricta*
Needlegrass	*Stipa comata*
Thickspike wheatgrass	*Agropyron dasytachyum*
Thurber needlegrass	*Stipa thurberiana*
Sedge	*Carex spp.*
Rush	*Juncus spp.*
Forbs	
Common yarrow	*Achillea millefolium*
Goldenweed	*Aplopappus spp.*
Halogeton	*Halogeton glomeratus*
Pepperweed	*Lepidium perfoliatum*
Russian thistle	*Salsola kali*
Shrubs	
Bailey's greasewood	*Sarcobatus baileyi*
Big sagebrush	*Artemisia tridentata*
Bitterbrush	*Purshia tridentata*
Blackbrush	*Coleogyne ramosissima*
Black greasewood	*Sarcobatus vermiculatus*
Black sagebrush	*Artemesia nova*
Budsage	*Artemesia spinescens*
Chokecherry	*Prunus virginiana*
Fourwing saltbush	*Atriplex canescens*
Gray Molly (Kochia)	*Kochia americana vestita*
Low sagebrush	*Artemisia arbuscula*
Mountain mahogany	*Cercocarpus ledifolius*
Nuttal saltbush	*Atriplex nuttalii*
Rabbitbrush	*Chrysothamnus spp.*
Rose	*Rosa spp.*
Sagebrush	*Artemisia spp.*
Shadscale	*Atriplex confertifolia*
Snakeweed	*Xanthocephalum sarothrae*
Snowberry	*Symphoricarpos spp.*
Spiny hopsage	*Grayia spinosa*
Spiny horsebrush	*Tetrademia spinosa*
Winterfat	*Ceratoides lanata*
Trees	
Aspen	*Populus tremuloides*
Birch	*Betula occidentalis*
Bristlecone pine	*Pinus aristata*
Cottonwood	*Populus fremontii*
Douglas fir	*Pseudotsuga menziesii*
Juniper	*Juniperus spp.*
Pinyon	*Pinus monophylla*
White fir	*Abies concolor*
Willow	*Salix spp.*

APPENDIX B

Livestock Forage Condition

Livestock forage condition was determined in accordance with instruction Memorandum WO 75-52, Change 1 and the draft BLM 4412 Manual, Physical Resource Studies. This manual is available in the Ely District Office for review. Condition of the range must include consideration of vegetation quality and quantity and soil erosion characteristics. Vegetation quality and quantity are the most important determinants of range condition for domestic livestock and wild horses and burros (BLM Manual 4412). Standards used were based on vegetation composition from Phase I Watershed Conservation and Development Inventory, 1971-1974 and the 1978-1979 Vegetation Inventory (Appendix B, Figure 1, Livestock Forage Condition Graph). Vegetation was classified as desirable, intermediate, and least desirable for both cattle and sheep:

1) Desirable plants: Are palatable, productive, and nutritious forage species, are often dominant under climax or near climax conditions, are long-lived, and have extensive root systems to aid in protecting the watershed against erosion. This category includes the important key species which are to be maintained or increased by intensive livestock management.

2) Intermediate plants: Are of secondary importance in the climax and are usually associated with, or indicative of, ecological successional stages. They replace the desirable plants as condition deteriorates and replace the least desirable plants as condition improves. They may be less palatable to grazing animals or be more resistant to grazing use.

3) Least desirable plants: Include those that are definately the poorer species in an ecosystem and consist principally of annuals, invaders, noxious, and low value forage plants. All annuals and poisonous species are included in the classification.

Standards for classification into each condition class were as follows:

1) Good condition: Composition is 40 percent or more of both desirable and intermediate species with at least 20 percent made up of desirable species. SSF is less than 60.

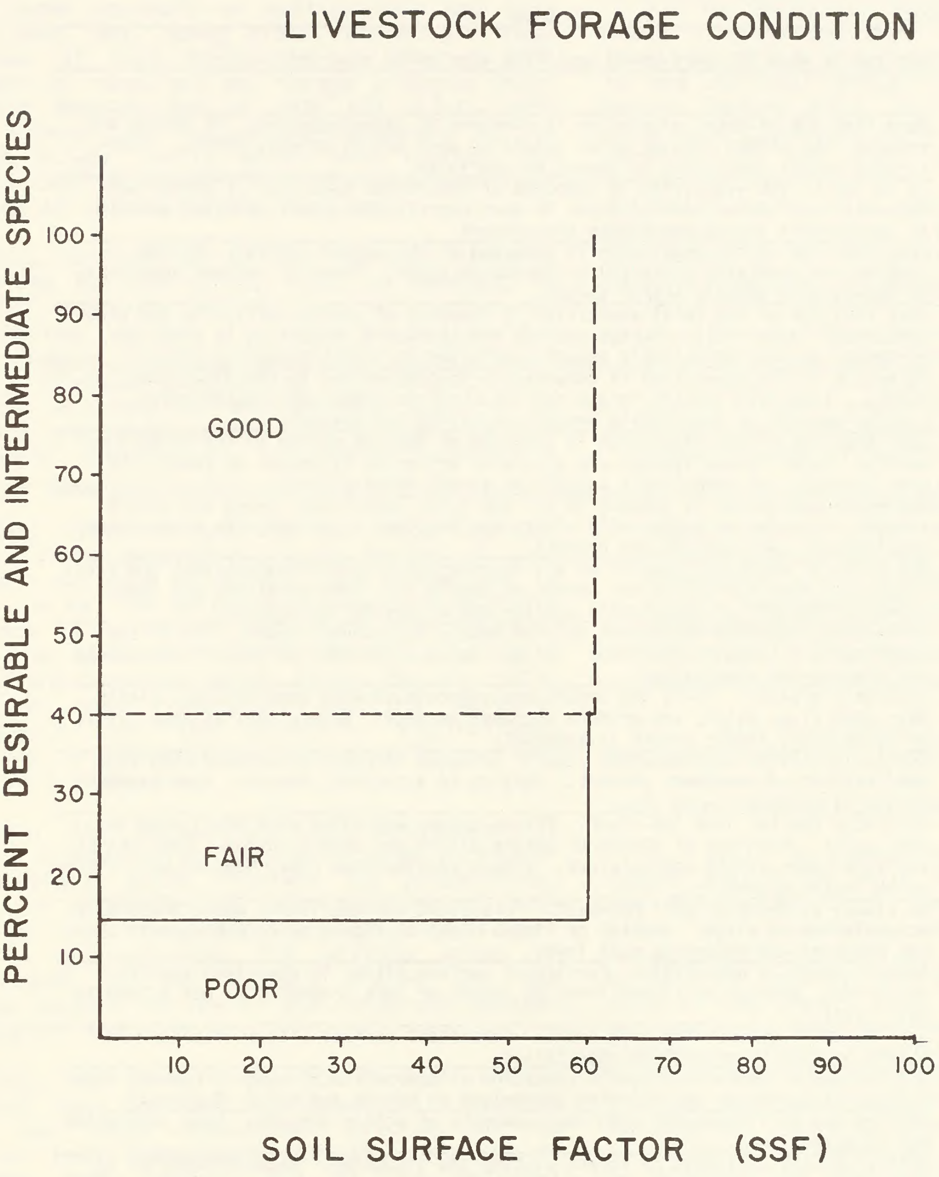
2) Fair condition: Composition is 15-39 percent of desirable and intermediate species with 5 or more percent made up of desirable species. SSF is less than 60. Also, those ecosystems where the composition comprises 60 percent or more of the intermediate species and less than 5 percent desirable species are present will be rated "fair condition" when the SSF is less than 60.

3) Poor condition: Composition is less than 15 percent desirable and intermediate species. SSF is more than 60. It should be noted that if the SSF of an ecosystem is more than 60, the site is rated in "poor" condition regardless of the plant composition.

Step-toe transects were used to collect necessary data from each major vegetative community in each allotment. An explanation for Soil Surface Factor (SSF) follows:

The SSF is an expression of current erosion activity. Seven categories of surface features are considered by the fieldman in the examination of the area represented by each transect. Both wind and water erosion are considered as applicable to each category. These features are: soil movement, surface litter, surface rock, pedestalling, rills, flow patterns, and gullies. (BLM Manual 7322.111B8a).

APPENDIX B - Figure 1



Source: BLM Draft Manual 4412, Physical Resource Studies

APPENDIX C

OBSERVED APPARENT TREND

Allotment____________________________ Examiner____________________________

Legal Description_______________________ Date____________________________

(Check appropriate box in each category which best fits area being observed)

SEEDED VEGETATION		
	8 points ☐	More than 50% of total vegetation is composed of seeded species. If shrubs are present, the seeded species occur mainly in open spaces between shrubs. Undesirable annual vegetation is absent or nearly so.
	4 points ☐	25 to 50% of the vegetation is composed of the seeded species. If shrubs are present, some seeded species occur in open unprotected areas. Limited amounts of undesirable annual vegetation are present.
	1 point ☐	Less than 25% of the vegetation is composed of the seeded species. Seeded species are generally protected by shrubs or rocks. There is an over abundance of undesirable annuals and/or shrubs.
NATIVE VEGETATION	8 points ☐	More than 50% of the total vegetation is composed of species native to the plant community. Major native forage species are available, occurring in open, unprotected areas. Undesirable annual vegetation is absent or nearly so.
	4 points ☐	25 to 50% of the vegetation is composed of species native to the plant community. Some major native forage species occur in open, unprotected areas. Limited amounts of undesirable annual vegetation are present.
	1 point ☐	Less than 25% of the vegetation is composed of species native to the plant community. Major forage species are generally protected by shrubs or rocks. An over abundance of undesirable annuals or shrubs exists.
REPRODUCTION	12 points ☐	Desirable vegetation is present in all age forms (seedlings, young and mature plants). Invader or undesirable plants are decadent or absent, few established seedlings of such species are present.
	8 points ☐	Age forms of desirable vegetation are represented by only mature plants and seedlings, 2-3 year old plants are absent or nearly so. Some seedlings and young plants of invader or undesirable species may or may not be present.
	3 points ☐	Desirable vegetation is present only as mature or decadent plants, few if any seedlings are being established. All age forms of invader or undesirable plants are present and unprotected.
VIGOR	5 points ☐	Desirable grasses: forbs and shrubs are vigorous showing good health. Plants have good size, color, and produce abundant herbage. Browse species show little or no hedging, leader growth is abundant.
	3 points ☐	Desirable species show moderate vigor. Adequate herbage is produced with some seed stalks and seedheads present. Hedging is occurring, however, some leader growth is evident.
	1 point ☐	Desirable species have low vigor. Plants appear unhealthy with small size and poor color. Portions of clumps or entire plants are dead or dying. Seed stalks and seed heads almost non-existent. Browse species show heavy hedging with little or no leader growth.
SOIL MOVEMENT	5 points ☐	No visual evidence of soil movement. Persistent surface litter where present is accumulating in place. Weather or lichen lines on stones or rock fragments are not apparent and extend to soil level.
	3 points ☐	Soil movement is detectable. Persistent surface litter is deposited against obstacles. Weather or lichen lines on stones or rock fragments do not extend to soil level.
	1 point ☐	Soil movement occurs with each event. Persistent surface litter is absent. Stones or rock fragments are pedestalled.
GULLIES	5 points ☐	Gullies may be present in stable condition with moderate sloping or rounded sides. Perennials should be establishing themselves on bottom and sides of channel.
	3 points ☐	Gullies are well developed with small amounts of active erosion. Some vegetation may be established.
	1 point ☐	Active gullies indicated by recent cutting and sloughing. Vegetation which is present has roots exposed.

TOTAL POINTS________

Rating of Apparent Trend: 26-35 = upward; 17-25 = no apparent trend; 7-16 = downward

Apparent Condition______________________

General Comments:

APPENDIX D

PROGRAMMATIC MEMORANDUM OF AGREEMENT BETWEEN THE DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT, THE ADVISORY COUNCIL ON HISTORIC PRESERVATION AND THE NATIONAL CONFERENCE OF STATE HISTORIC PRESERVATION OFFICES REGARDING THE LIVESTOCK GRAZING AND RANGE IMPROVEMENT PROGRAM

WHEREAS, the Department of the Interior, Bureau of Land Management, administers public lands principally in the 11 Western States and Alaska, under concepts of multiple-use and sustained yield, and, among other responsibilities, the Bureau of Land Management is charged with management of rangeland and forage products under the Taylor Grazing Act of 1934 (43 U.S.C. 315) and the Federal Land Policy and Management Act of 1976 (43 U.S.C. 7101), which also charges the Bureau of Land Management with the management and protection of cultural resources; and

WHEREAS, Section 106 of the National Historic Preservation Act (16 U.S.C. 470f, as amended, 90 Stat. 1320) requires that the head of any Federal agency having direct or indirect jurisdiction over a proposed Federal, federally assisted, or federally licensed undertaking affecting properties in or eligible for the National Register of Historic Places shall afford the Advisory Council on Historic Preservation (hereafter Council) a reasonable opportunity for comment; and

WHEREAS, livestock grazing and range improvement activities undertaken by the Bureau of Land Management may have an effect upon properties in or eligible for the National Register of Historic Places and will require compliance with Section 106 of the National Historic Preservation Act, Section 2 of Executive Order 11593, May 13, 1971, "Protection and Enhancement of the Cultural Environment," and the Council's regulations, "Protection of Historic and Cultural Properties" (36 CFR Part 800); and

WHEREAS, the Bureau of Land Management is currently engaged in an ongoing program of rangeland management which involves the preparation, by 1988, of approximately 145 environmental statements on specific areas where grazing is permitted on approximately 174 million acres of public lands in the Western States and has requested Council review of the rangeland management program; and

WHEREAS, the Council and the Bureau of Land Management have met and reviewed the livestock grazing and range improvement program of the Bureau of Land Management and its relation to compliance with Section 106 of the National Historic Preservation Act of 1966 and Executive Order 11593, as implemented by the Council's regulations (36 CFR Part 800) and the responsibilities for historic and cultural resources under the National Environmental Policy Act of 1969 (42 U.S.C. 4321) as implemented by the Council on Environmental Quality in the "National Environmental Policy Act Regulations" (40 CFR Parts 1500-1508).

NOW, THEREFORE, it is mutually agreed that the Bureau of Land Management will ensure, through the stipulations outlined in this Programmatic Memorandum of Agreement, that historic and cultural properties will be given adequate consideration in grazing management program decisions and implementation which includes, but is not limited to, the preparation of grazing environmental statements, thereby meeting its responsibilities under Section 106 of the National Historic Preservation Act.

STIPULATIONS

1. The Bureau of Land Management will conduct Class I (existing data inventory) and Class II (sampling field inventory) inventories of historic and cultural properties, as specified in BLM Manual Section 8111, to be completed at the appropriate planning state and prior to the preparation of the draft environmental statement. Inventory results will be evaluated, in consultation with the appropriate State Historic Preservation Officer, to identify properties including in or eligible for inclusion in the national Register of Historic Places.

   a. The inventory requirement may be modified on a case by case basis for interim grazing environmental statements (i.e., those prepared during fiscal years 1979 through 1981) if an alternative is acceptable to the appropriate State Historic Preservation Officer.

   b. If an acceptable alternative cannot be negotiated with the appropriate State Historic Preservation Officer, then the Bureau of Land Management will proceed with the preparation of the environmental statement and request the comments of the Council in accordance with 36 CFR 800. The Council's comments will be included in the final environmental statement.

2. This Programmatic Memorandum of Agreement and the inventory reports identifying historic and cultural properties will be referenced in each environmental statement.

3. Prior to commencement of any range improvement activities which involve land disturbance, the Bureau of Land Management will conduct a Class III inventory, as specified in the BLM Manual Section 8111.4, supplementing previous surveys to locate, identify, and evaluate properties in the impact area that may be eligible for inclusion in the National Register of Historic Places. Range improvement activities which involve land disturbance include, but are not limited to, such activities as construction of fencing and corrals, water development, chaining, and controlled burning. If properties that may be eligible for the National Register are found, the Bureau of Land Management will consult with the appropriate State Historic Preservation Officer and forward the documentation to the Keeper of the National Register to obtain a determination of eligibility in accordance with 36 CFR Part 63.

4. The Bureau of Land Management will provide the appropriate State Historic Preservation Officer with copies of the reports of the Class I, II, and III inventories in accordance with Sections 102(a)(2) and 202(c)(9) of the Federal Land Policy and Management Act of 1976 for inclusion as part of the State inventory conducted pursuant to 36 CFR Part 61.

5. The Bureau of Land Management will design the livestock grazing and range improvement program to avoid adverse effects on properties included in or eligible for inclusion in the National Register of Historic Places, unless this is not prudent or feasible.

6. Where it is not prudent or feasible to avoid adverse effects on properties included in or eligible for inclusion in the National Register of Historic Places as part of a livestock grazing and range improvement program authorization and the property is not a National Historic Landmark or National Historic Site, the Bureau of Land Management will consult with the appropriate State Historic Preservation Officer and will:

a. Develop mutually acceptable measures to mitigate the impact of the proposed action; and

b. Notify the Council in writing of agreements reached with the State Historic Preservation Officer under the provisions of 6(a) above. The Council need not be afforded further opportunity for review and comment.

7. The provisions of this Programmatic Memorandum of Agreement shall apply only to the States of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

8. If it is determined that the affected property is a National Historic Landmark or National Historic Site, or agreement cannot be reached between the Bureau of Land Management and the appropriate State Historic Preservation Officer on satisfactory mitigation measures, the Bureau of Land Management will request the comments of the Council in accordance with 36 CFR Part 800).

9. At the request of the President or a Member of Congress, the Council may advise the Bureau of Land Management, that a particular action, authorized by a grazing permit or lease, will require individual review and comment pursuant to 36 CFR Part 800. In that event, the Bureau of Land Management will comply with the provisions of the Council's regulations.

10. The Council and the Bureau of Land Management will review the provisions of this Agreement on an annual basis to determine whether modification or termination is appropriate. Should the current livestock grazing program of the Bureau of Land Management be revised, the ratifying parties will mutually determine whether the provisions of the Agreement will continue to apply.

APPENDIX E

THE NEVADA DIVISION OF HISTORIC PRESERVATION AND ARCHEOLOGY
201 South Fall Street — Nye Building — Room 113 — Carson City, Nevada 89710
MIMI RODDEN, Administrator
Telephone (702) 885-5138

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
ROLAND D. WESTERGARD, Director

ROBERT LIST
GOVERNOR

May 15, 1981

Ms. Sue Steel
Staff Archeologist
Nickens and Associates
P.O. Box 727
Montrose, CO 81401

Dear Ms. Steel:

Regarding your letter of April 28, 1981, the four National Register sites you mention are contained within the Schell Resource Area. The Mt. Irish area was prepared for nomination in 1974; the file has since gone dormant owing to lack of response from the Federal land management agency involved.

The following National Register sites may also be included within the Schell Resource Area. The quality of the map included with your correspondence did not allow exact geographic locations to be plotted:

1. The old Lincoln County Courthouse in downtown Pioche.
2. Fort Schellbourne, located on State Route 2, 3 miles east of SR 2 and US 93.
3. Ward Charcoal Ovens, located about 15 miles south of Ely.

The larger eastern Nevada area, of which Schell Resource area is part, is known to be archeologically sensitive. Plans for cultural resource evaluation and compliance with applicable Federal regulations pertaining to the preservation of the cultural environment should be addressed in the Environmental Impact Statement.

This office should receive a copy of the EIS for review and comment.

Should you need any additional assistance do not hesitate to contact me.

Sincerely,

MIMI RODDEN, Administrator
(State Historic Preservation Officer)

By: William D. Self

Recycling
Nevada's Heritage

O-343 WDS:vh

GLOSSARY

ABORIGINAL: Pertains to or describes the original inhabitants of an area.

ACRE-FOOT (AC-FT): The volume (as of irrigation water) that would cover one acre to a depth of one foot.

ACTIVE PREFERENCE: The total number of AUMs that can be licensed.

ALLOTMENT: An area allocated for the use of the livestock of one or more qualified grazing permittees including prescribed numbers and kinds of livestock under one plan of management.

ALLOTMENT MANAGEMENT PLAN (AMP): A documented program which applies to livestock operations on the public lands and which is prepared in consultation with the permittee(s) or lessee(s) involved and which: (1) prescribes the manner in and extent to which livestock operations will be conducted in order to meet the multiple-use, sustained yield, economic, and other needs and objectives as determined for the public lands through landuse planning; (2) describes the type, location, ownership, and general specifications for the range improvements to be installed and maintained on the public land to meet the livestock grazing and other objectives of land management; and (3) contains such other provisions relating to livestock.

ANIMAL UNIT (AU): One mature (1,000-lb) cow or its equivalent (4 deer, 5 antelope, 5 bighorn sheep, 1.25 elk, or 1 horse) based upon an average daily forage consumption of 26 pounds of dry matter per day.

ANIMAL UNIT MONTH (AUM): The amount of forage necessary for the sustenance of one cow or its equivalent for one month.

APPARENT TREND: Change in vegetation and soil characteristics resulting directly from environmental factors, primarily climate and grazing as observed at one point in time.

ARCHAEOLOGICAL RESOURCES: All prehistoric and historic physical evidence of past human activity which can be used to reconstruct lifeways and cultural history of past peoples. These include sites, artifacts, environmental data, and all other relevant information and the contexts in which they occur.

ARTIFACT: Any object made, modified, or used by humans, usually movable. Objects which are recorded as prehistoric or historic artifacts have sociocultural or scientific values and meet the general criterion of being more than 50 years old.

CANOPY: The uppermost layer of vegetation consisting of crowns of trees or shrubs in a forest or woodland.

CARRYING CAPACITY: An estimate of the maximum number of animals (expressed in AUMs) a given area can support each year without inducing damage to the vegetation or related resources.

CLASS I INVENTORY: An inventory of a defined area designed to provide a narrative overview from existing cultural resource data. Also provides a compilation of existing cultural resource record data.

CLASS II INVENTORY: A sample-oriented field inventory designed to locate and record all cultural resource sites within a portion of a defined area.

CLASS III INVENTORY: An intensive field inventory designed to locate and record all cultural resource sites within a specified area.

CLIMAX: The highest and most stable stage of ecological development of a biotic community capable of perpetuation under the prevailing climate and soil conditions when undisturbed by outside forces.

COLIFORM: A group of bacteria used as an indicator of santiary quality of water.

CRITICAL GROWTH PERIOD: The period in a plant's growth cycle when food reserves are lowest and grazing is most harmful; for example, in grass species this period begins with the boot (prebud stage) and closes with complete maturation of the fruit.

CRUCIAL RANGE: Range on which a species depends for survival; there are no alternative ranges available. May also be called "key range."

CULTURAL RESOURCES: Those fragile and nonrenewable remains of human activity, occupation, or endeavor, reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features, that were of importance in human events. These resources consist of (1) physical remains, (2) areas where significant human events occurred--even though evidence of the event may no longer remain, and (3) the environment immediately surrounding the resource.

CULTURAL RESOURCE INVENTORY: A descriptive listing and documentation, including photographs and maps, of cultural resources; included are the processes of locating, identifying, and recording sites, structures, buildings, objects, and districts through library and archival research, information from persons knowledgable about cultural resources, and varying levels of intensity of on-the-ground field surveys (see cultural resource inventory classes).

CULTURAL RESOURCE SITE: A physical location of past human activities or events. Cultural resource sites are extremely variable in size and range from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features. Prehistoric and historic sites which are recorded as cultural resources have sociocultural or scientific values and meet the general criterion of being more than 50 years old.

ECOLOGY: The study of the interactions that determine the distribution and abundance of organisms.

ECOSYSTEM: Collectively, all populations in a community, plus the associated environmental factors.

ENDANGERED PLANTS: Any plant in danger of extinction throughout all or a significant portion of its range.

EROSION: Detachment and movement of soil or rock fragments by water, wind, ice, or gravity.

ETHNOBOTANICAL: Pertaining to aboriginal uses of plants.

EXCAVATION: The controlled scientific removal of artifacts and recording of data from subsurface cultural resource deposits.

EXPLORATORY SOIL SURVEY: For general program planning; compiled from previously completed reconnaissance and detailed surveys and synthesis of data from geology, vegetation, climate, and geomorphology.

FINAL DEMAND: Exports plus purchases made inside the area with money originating outside.

FISHERMAN DAY: One fisherman spending 12 hours fishing in BLM waters, or 12 fishermen spending 1 hour each, or any combination of these.

FORAGE: All browse and herbaceous foods that are available to grazing animals.

FORB: A nongrass seed-producing plant that does not develop persistent woody tissue.

FOURTH ORDER SOIL SURVEY: Order of survey is an indication of detail. A fourth order survey is less detailed than a third order survey. The lesser amount of detail is a result of either smaller scale mapping (1 in to 1 mi rather than 2 in to 1 mi) or a lesser number of test pits per unit area or both.

GRAZING PREFERENCE: The total number (active and suspended non-use) of animal unit months of livestock grazing on public land apportioned and attached to base property owned or controlled by a permittee.

GRAZING SYSTEM: A systematic sequence of grazing treatments applied to an allotment to reach identified multiple-use goals or objectives by improving the quality and quantity of the vegetation.

GRAZING TREATMENT: A prescription under a grazing system which grazes or rests a unit of land at particular times each year to attain specific vegetation goals.

GREEN-UP: When plants start producing new growth.

HABITAT: Place where an animal or plant normally lives, often characterized by a dominant plant form (sagebrush habitat).

HISTORIC RESOURCES: All evidences of human activity that date from historic (recorded history) periods.

HUNTER DAY: One hunter spending 12 hours hunting on BLM land, or 12 hunters spending 1 hour each, or any combination of these.

IMPROPER UTILIZATION: Grazing of the vegetation resource at levels other than those recommended in the Nevada Range Studies Task Group Monitoring Procedures, including overutilization, underutilization, and inefficient distribution of grazing.

INTENSIVE MANAGEMENT: Managing the vegetation resource through a grazing system to obtain desired results.

ISOLATED FIND: A single object without other associated historic or prehistoric artifacts.

KEY AREA: (1) A portion of range which, because of its location, grazing, or browsing value and/or use, serves as an indicative sample of range conditions, trend, or degree of use; (2) A key area that guides the general management of the entire area of which it is a part.

KEY FORAGE SPECIES: (1) Forage species whose use serves as an indicator to the degree of use of associated species; (2) those species which must, because of their importance, be considered in the management program.

LICENSED USE: Active use AUMs that a permittee has paid for during a given grazing period.

LINEAR PROGRAMMING MODEL: A mathematical model used to solve practical problems (such as resource allocation) by linear functions where the variables involved are subject to constraints.

LITHIC: Pertaining to stone.

LITTER: A surface layer of loose organic debris consisting of freshly fallen or slightly decomposed organic materials.

LONG-TERM: A point in time 25 years following the completion of the EIS.

MANAGEMENT FRAMEWORK PLAN, STEP 1 (MFP-1): Formal recommendations derived from resource information gathering and analysis by individual resource specialists (for example, wildlife or recreation).

MANAGEMENT FRAMEWORK PLAN, STEP 2 (MFP-2): Resource area manager's multiple-use recommendations to the District Manager following public meetings on MFP-1.

MANAGEMENT FRAMEWORK PLAN, STEP 3 (MFP-3): Final District Manager's decisions after the EIS process, reflecting all previous recommendations and public reactions.

MULTIPLE-USE: The management of public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people.

NATIONAL REGISTER OF HISTORIC PLACES: The official list, established by the Historic Preservation Act of 1966, of the Nation's cultural resources worthy of preservation.

PALEO-CLIMATIC: Pertaining to prehistoric climates.

OPTIMUM NUMBERS: The number of animals that may survive on a given range in reasonable condition.

PERMITTEE: One who holds a permit to graze livestock on public land.

PETROGLYPH: Carving or inscription on a rock.

PHENOLOGY: The study or periodic biological phenomenon such as flowering and seeding, especially as related to climate.

PICTOGRAPH: An ancient or prehistoric drawing or painting on a rock wall.

PLANT VIGOR: The state of health of a plant. The capacity of a plant to respond to growing conditions, to make and store food and to complete the reproductive stages.

POPULATION: All of the individuals belonging to a single species occupying a particular area or space.

PREHISTORIC: Pertaining to that period before written history.

PROTOHISTORIC: Pertains to identifiable cultural situations which overlap the prehistoric and historic periods.

PUBLIC LANDS: Lands administered by the US Secretary of the Interior through the Bureau of Land Management.

QUADRAT FREQUENCY METHOD: The use of permanent plots (100' square) in which measurements or estimates are used to document frequency of key species (rooted) in key areas over a period of time.

QUARRY: A source area for lithic materials used in the manufacture of artifacts.

RANDOM SAMPLE (OF CULTURAL RESOURCES): A sampling scheme designed to provide an unbiased selection of sample units or of the population being sampled.

RANGE CONDITION: The present state of vegetation of a range site in relation to the climax plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in the present plant community resemble that of the climax plant community for the site. Range condition is basically an ecological rating of the plant community. Four range condition classes are used to express the degree to which the composition of the present plant community reflects that of the climax: Excellent (76-100%), Good (51-75%), Fair (26-50%), Poor (0-25%).

RANGE IMPROVEMENT: A structure, development, or treatment used to rehabilitate, protect, or improve the public lands to advance range betterment.

RANGE SITE: A distinctive kind of rangeland that differs from other kinds in its ability to produce a characteristic natural plant community. A range site is the product of all the environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differs from that of other range sites in the kind of proportion of species or in total production.

RANGE SURVEY: A method for the measuring of vegetation production to provide baseline data for establishing the grazing capacity used in making management decisions.

REASONABLE NUMBERS: The average population estimates for mule deer, pronghorn antelope, big horn sheep, and elk over a 20-year period.

REGIONAL AND NATIONAL COMMUNITIES: Environmental and special interest groups.

REMOUNT STALLIONS: Originally, a supply of fresh replacement horses; in this context, brood stock turned loose on the range to maintain and/or upgrade wild horse herds.

RIPARIAN: Related to or living or located on the bank of a natural water course (as a river) or sometimes of a lake.

ROCK ART: Drawings made on or carved into rock.

ROCK SHELTER: A naturally occurring rock overhang that provided a protected location for habitation.

SALVAGE: The recovery of material and data from an affected cultural resource prior to its alteration or destruction, through recordation, documentation, partial or total excavation, and collection for analysis and interpretation.

SEED TRAMPLING: Trampling of disseminated seed into the soil mantle by livestock, wild horses and burros, and wildlife.

SENSITIVE: (1) Designation applied to species not yet officially listed but which are undergoing a status review or are proposed for listing according to Federal Register notices published by the Secretary of the Interior or the Secretary of Commerce or according to comparable state documents published by state officials; (2) applied to species whose populations are consistently small and widely dispersed or whose ranges are restricted to a few localities, such that any appreciable reduction in numbers, habitat, availability, or habitat condition might lead toward extinction; (3) applied to species whose numbers are declining so rapidly that official listing may become necessary as a conservation measure.

SHORT-TERM: The period of time needed to implement management's decisions following the completion of the EIS, approximately 10 years.

SIGNIFICANT IMPACT: A meaningful standard to which an action may impact the environment. The impact may be beneficial, adverse, direct, indirect, or cumulative, and may have short-term or long-term effects.

SITE (CULTURAL RESOURCES): The physical location where past human activities or events occurred.

SOIL SURFACE FACTOR (SSF): A numerical expression of surface erosion activity caused by wind and water. Values vary from 0 to 100 and these are grouped into 5 condition classes as follows: 0-20, stable; 21-40, slight erosion; 41-60, moderate erosion; 61-80, critical erosion; 81-100, severe erosion.

SPECIES: (1) The classification level of biological nomenclature which categorizes each group of related organisms potentially capable of interbreeding; (2) the accepted level of classification to differentiate one specific type of organism from another (for instance, *Ursus americanus*, the black bear, is differentiated as a separate species from *Ursus horribilis*, the grizzly bear.

SUSTAINED YIELD: The achievement and maintenance in perpetuity of a high level of annual or regular periodic output of the various renewable resources of the public lands consistent with multiple-use.

THIRD ORDER SOIL SURVEY: A more detailed survey than fourth order. The greater amount of survey detail results from either larger scale mapping (2 in to 1 mi rather than 1 in to 1 mi) or a greater number of test pits per unit area or both.

THREATENED PLANT: Any plant likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

TREND: The direction of change in range condition over a period of time, expressed as upward, static, or downward.

TURBIDITY: A suspension of solid particles in water. Turbidity is determined by measuring the percentage of a beam of light which passes through a sample of water. The measurement is used as an indicator of erosion and sedimentation in streams.

TYPE II ANALYSIS: An analysis of sectors that change directly (such as livestock), sectors that change indirectly (such as feed production and equipment sales), and sectors that experience induced change (such as personal car and furniture dealers effected by increased or decreased sales due to altered household income).

UNDERSTORY: Plants growing beneath the canopy of other plants. Usually refers to grasses, forbs, and low shrubs under a tree or brush canopy.

UTILIZATION: The portion of the current year's forage production that is consumed or destroyed by grazing animals. May refer either to a single species or to the vegetation as a whole.

VALUE ADDED: Income over and above out-of-pocket expenses, and loan payments; return to owner's equity and labor.

VEGETATION: Plants in general or the sum total of the plant life above and below ground in an area.

VEGETATION MANIPULATION: Alteration of vegetation by fire, mechanical, chemical, or biological means to meet management objectives.

VISUAL RESOURCE MANAGEMENT (VRM): The planning, design, and implementation of management objectives to provide acceptable levels of visual impacts for all BLM resource management activities.

VISUAL RESOURCES: Visible features of the landscape including land, water, vegetation, and animals.

WATERSHED: A total area of land above a given point on a waterway that contributes runoff water to the flow at that point.

WILDERNESS STUDY AREA: A roadless area or island that has been inventoried and found to have wilderness characteristics as described in Section 2(c) of the Wilderness Act of 1964 (78 Stat. 891).

ACRONYMS

ACEC:	Area of Critical Environmental Concern
AMP:	Allotment Management Plan
AUM:	Animal Unit Month
BLM:	Bureau of Land Management
CEQ:	Council of Environmental Quality
CRMP:	Coordinated Resource Management and Planning
EIS:	Environmental Impact Statement
FS:	Forest Service
HMP:	Habitat Management Plan
MFP:	Management Framework Plan
NEPA:	National Environmental Policy Act
NDOW:	Nevada Department of Wildlife
NTU:	Nephelometer Turbidity Unit
ORV:	Off-road vehicle
SAI:	Significant Adverse Impact
SBI:	Significant Beneficial Impact
SCS:	Soil Conservation Service
SSF:	Soil Surface Factor
TDS:	Total Dissolved Solids
URA:	Unit Resource Analysis
USDA:	US Department of Agriculture
USDI:	US Department of Interior
WMA:	Wildlife Management Area

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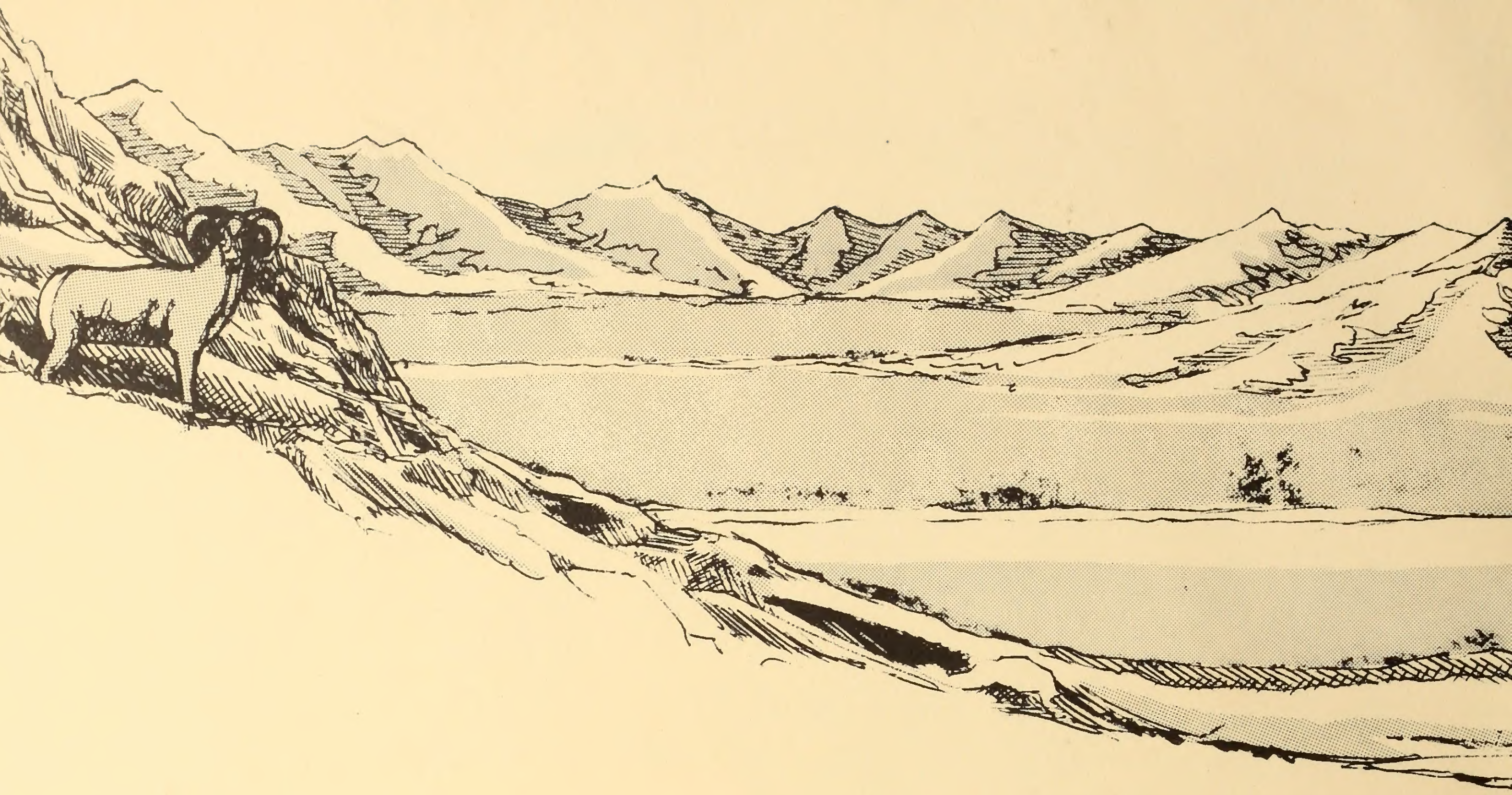

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